

NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

Directories in the limelight

By Mary Petrosky

After years as a supporting player in network operating system (NOS) administration, directory services are making the leap to the bigger management stage, ready to play the leading role in policy-based management. For the few who already exploit directory services, your management benefits are about to multiply. For those who have yet to deploy an enterprise directory, the message is clear: The sooner you get with the program, the sooner you can tap these same benefits.

See Directories, page 43

Coming soon: Directories star in an application and equipment management role.



GUSTAF FJELSTROM

Novell user loyalty put to the test

Despite a core of devoted customers, Novell risks losing its key accounts to rival Microsoft's Windows NT, surveys say.

By Christine Burns

How much longer can Novell, Inc. count on user loyalty as its weapon of choice in the battle against Microsoft Corp.?

Perhaps not as long as Novell officials might hope. There is a growing body of anecdotal evidence which indicates that a good portion of Novell's 70 million or so users are hesitant about spending money on new Novell software.

For example, in 1997, for the first time since NT debuted in 1993, new unit shipments of NT beat out new NetWare unit shipments, according to International Data Corp. (IDC), a research firm in Framingham, Mass. While

IDC determined that the overall server operating system market grew by 10.8% from 1996 to 1997, Novell shipments declined by 9.4% in that same time frame.

"It's Novell's loss — not mine — that it can't effectively market itself against Microsoft."

Dan Blevins, technical analyst, Hallmark Cards, Kansas City, Mo.



ED LALLO

"Novell is losing the tight grasp it used to have over its installed base," said Neil MacDonald, a research director with Stamford,

See Novell, page 58

A \$4.4 billion Qwest for LCI

By David Rohde
Washington, D.C.

Say the word "Qwest" and notions of inexpensive IP telephony may start dancing in your head, thanks to all the publicity former AT&T executive Joe Nacchio has garnered for his explosively popular start-up.

But managers of traditional, nonconverged networks who are looking for economical broadband data capacity may have the most to gain in last week's announcement that Qwest Commu-

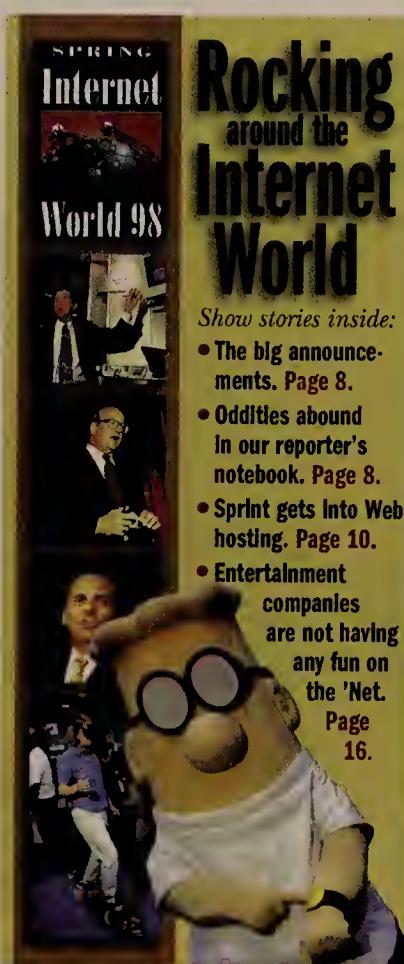
nifications International, Inc. will acquire long-distance carrier LCI International, Inc. for \$4.4 billion.

Qwest, which is building a colossal 16,285-mile national OC-192 Synchronous Optical Network (SONET), chose as its partner a fast-growing but surprisingly traditional retail carrier. LCI's service offerings closely map the categories established by AT&T, MCI Communications Corp. and Sprint Corp.

LCI gives Qwest an installed base of mostly small and midsize

customers who have been sold on the carrier's outbound and inbound toll services, and its FramePlus frame relay service running over Newbridge Networks Corp.'s 36170 multiservice

See Qwest, page 16



Incompatibility woes drive DSL compromise

By Tim Greene

The makers of digital subscriber line (DSL) gear are finally waking up to the fact that the technology lacks one major feature: interoperability.

Seeking a remedy, a newly enlightened group of vendors is meeting this week at the University of New Hampshire to run interoperability tests on their

asymmetric DSL (ADSL) modems. These devices can turn regular phone lines into broadband links to access the Internet or corporate networks.

The vendors' effort has been a long time coming in a crowded and confusing field. "ADSL has not kept up with interoperability," said Brett Azuma, a chief

See DSL, page 60

- A proposed ADSL Interoperability standard from Cisco, Microsoft, 3Com and other vendors
- The DSL Lite proposal
- Primers about DSL varieties

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ALREADY.

PLATT-ITUDES

Hewlett-Packard's CEO Lew Platt warned Internet World attendees about the dark side of the 'Net. Page 8.

KIM KULISH/SABA

HIGH GEAR

WaiLAN Communication's new modems offer speedier digital subscriber line-based data transport. Page 25.



ROMPER ROOM

Many companies are offering entertaining ways to keep employees such as Nathan Mehl of Cohesive Network Systems. Page 50.

SHAWN G. HENRY

News

- 4 Cisco's next-generation multi-layer switches on the horizon.
- 4 Bay is looking to tie IP with the PSTN via Signaling System 7.
- 6 With Netscape delaying or killing Java products, what is its strategy on thin clients?
- 8 3Com and Siemens have voice/data integration answers.
- 10 Sprint finally gets its Web hosting service together.
- 14 Debate intensifying over what constitutes spam.
- 15 IBM to boost support in front-end processors.
- 16 Hollywood bigwigs are finding it hard to crack the Web.
- 59 Microsoft offers limited Outlook 98 giveaway.
- 60 DSL carrier Covad to offer services in six major cities.

Local Networks

- 21 Godzilla makers build a monster LAN.
- 22 Intel, Microsoft push into workstation market.
- 23 Dave Kearns: Who's cooking the numbers?

Internetworks

- 25 Users rely on reporting tools for service-level management.
- 26 XcelleNet rounds out its remote client management.

Carriers & ISPs

- 31 Report: Carriers, not users, to blame for repeated exhaustion of phone numbers.

SPECIAL FOCUS

Inside IBM

What is the future of IBM's Networking Hardware Division? Page 28.

NetworkWorld Contents

March 16, 1998 Volume 15, Number 11

31 WorldCom's acquisition of CompuServe and ANS Communications is final; now the carrier spells out how it will organize its Internet assets.

32 PSINet paves its way as an independent ISP.

34 Daniel Briere and Christine Heckart: Carriers missed the boat on wireless fire sale.

Intranet Applications

37 Sendmail, Inc. is created to commercialize the widely used Sendmail freeware e-mail application.

37 Sun's image could be harmed over Microsoft Java.

38 Scott Bradner: Minutes as a measure.

Technology Update

39 The road to directory-enabled networks.

Management Strategies

50 Giving your staff a chance to experiment with emerging technologies can help boost retention and innovation.

Opinions

40 Editorial: *Network World* honored for journalistic excellence.

40 Ira Brodsky: CDMA proves the power of an open standards process.

41 Mary Petrosky: Why you need a QoS scheme.

62 Mark Gibbs: PDF use revisited: Yes and no, how and why.

62 'Net Buzz: Corporate giants double as venture partners; Microsoftians launch new attack on Java.

Net Know-It-All. Page 6.

Message Queue. Page 40.

Editorial and advertiser indexes. Page 57.

FIND IT NO FUSION

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This Week

Only on Fusion

It's all forums all the time on *Network World Fusion*:

Spam. Read our discussion on different shades of spam (page 14), then come online for a forum to discuss it. We've lined up the president of an Internet service provider and a spokesman from the Direct Marketing Association to jump into the debate. Plus, help us better define spam by taking our online spam quiz. **DocFinder: 6217**

Remote access: A reader can't seem to get remote access clients to connect to the Internet via a proxy server running DHCP. Any suggestions? **DocFinder: 6222**

Servers. Another reader is looking for advice on the best way to mirror an in-house Unix-based Web server on an Internet service provider's machine. **DocFinder: 6223**

NOSes. In a recent column, Mark Gibbs called for the creation of an anti-Microsoft coalition based on the free Linux operating system. Could it really happen? Would any sane IS manager bet the enterprise on an operating system with no real corporate backing? Jump into our new Linux forum and let us — and other readers — know what you think. **DocFinder: 6211**

HOW TO GET ONTO NETWORK WORLD FUSION

Click on Register on the home page and follow the instructions. Subscribers, keep your NWF number — highlighted on the front cover's mailing label — handy during registration. Nonsubscribers must fill out an online registration form.

FEATURES

DIRECTORIES IN THE LIMELIGHT:

Coming soon: Directories star in an application and equipment management role. Page 1.

REVIEW: MEET ME ON THE NET

White Pine's MeetingPoint serves up videoconferencing, but don't plan a big rollout just yet. Page 48.

GUSTAV FJELSTROM

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News briefs, March 16, 1998

Executive moves, Part I: Former Apple, IBM exec Hancock surfaces

Former Apple Computer, Inc. and IBM executive Ellen Hancock has been named president of Exodus Communications, Inc., a privately held California-based Internet service provider and Web hosting company. Hancock will report to Chandra Sekhar, Exodus CEO and chairman. Exodus, which is planning to go public, provides Web hosting services through its data centers in Los Angeles, New York, Washington, D.C., Seattle and Santa Clara, Calif.



Exodus' Hancock

Executive moves, Part II: Internet company snags former Cisco vice president

Former Cisco Systems, Inc. executive Stephen DeWitt has been named president and CEO of Cobalt Microserver, Inc., a maker of low-cost Internet and intranet servers. While at Cisco, DeWitt had been vice president and general manager of the company's enterprise network management business unit and was instrumental in Cisco's Web-based management initiatives. DeWitt's responsibilities at Cisco were split between Jeff Krause, vice president of network management engineering, and Jayshree Ullal, vice president of enterprise marketing.

See you in court

Search engine maker Verity, Inc., of Sunnyvale, Calif., last week sued Lotus Development Corp., of Cambridge, Mass., over what Verity contends are copyright infringements in Lotus Notes 5.0, due out later this year. Verity claims Lotus exceeded the scope of a 1992 agreement between the two companies by adding advanced search technology to the Notes upgrade. Lotus officials declined to comment on the suit.

Tivoli taps Marimba

Tivoli Systems, Inc. last week said it has agreed to an OEM arrangement with Marimba, Inc. to integrate Marimba's Castanet software with Tivoli's recently announced Cross-Site for Deployment electronic-commerce management software (NW, March 9, page 10). Castanet is push technology that Tivoli had been distributing up to now.

That secure feeling

Network Associates, Inc. last week introduced Net Tools Secure, a new software suite that combines antivirus, encryption and policy management software. Net Tools Secure includes:

- Total Network Security, a suite of encryption, authentication and policy management software that includes a royalty-free software development kit. The suite features 128-bit encryption e-mail, files and disks, as well as policy management applications for multiple sites and connections.

- McAfee Total Virus Defense Suite, which contains antivirus software that protects against hostile ActiveX and Java applets by securing desktops, servers and companies' Internet gateways. Net Tools Secure will be available March 31, and pricing starts at \$46 per user for a 5,000-user network.

Internet freedom of expression battle looming

Two civil liberties groups have vowed to fight bills passed last week by a U.S. Senate committee because the organizations contend the proposals would hamper freedom of expression on the Internet. The bills include a proposal from Senator John McCain (R-Ariz.), requiring schools and libraries with federally subsidized Internet access to provide software filters. Also included is the so-called Communications Decency Act II, proposed by Senator Dan Coats (R-Ind.), outlawing commercial Internet content that is "harmful to minors." The American Civil Liberties Union (ACLU) and the Center for Democracy and Technology are opposed to the proposed laws. The ACLU last year successfully fought the Communications Decency Act, which was ruled unconstitutional by the U.S. Supreme Court.

Cisco preps Catalyst 8500 switches

New line based on 12000 Gigabit Switch Routers, expected to ship by midyear.

By Jim Duffy

San Jose, Calif.

Cisco Systems, Inc.'s next-generation gigabit, multilayer LAN switches are close relatives of the company's existing gigabit switch routers, according to sources who were briefed by Cisco.

Cisco is expected to announce and ship some members of the Catalyst 8500 line before mid-year, sources said. The company is also expected to soon ship a new 13-slot, 20G bit/sec LightStream Layer 3 ATM/Gigabit Ethernet switch developed under the code name "Cougar" (NW, July 28, 1997, page 1).

The Catalyst 8500 rollout includes at least two models — a 13-slot chassis and a five-slot switch, sources said. One of the models in the Catalyst 8500 line is expected to resemble Cisco's 12000 Gigabit Switch Router (GSR). If so, it would feature a chassis that can hold up to five switching fabric and route processing cards, eight LAN modules, 10G to 40G bit/sec of bandwidth, and OC-3 and OC-12 ATM and packet interfaces.

The switch would also have enough bandwidth to support 40 Gigabit Ethernet ports and 400 Fast Ethernets. And Cisco claims the GSR can forward a minimum of 25 million packet/sec.

Cisco would not comment on the Catalyst 8500. Users are anxious to kick its tires, though.

"It's kind of a super combination of a Catalyst 5500 with a [Route Switch Module] and a GSR," said Rob Bowman, director of backbone engineering at Exodus Communications, Inc., an Internet server hosting and management company in Santa Clara, Calif. "It's a true Layer 3 LAN switch. It fits very well into our global plans of expanding our LAN and our WAN to higher speeds, which include Gigabit Ethernet in the LAN."

The Catalyst 8500 catch

- Two models: 13-slot and five-slot
- Based on Cisco's Gigabit Switch Router
- Express Forwarding Layer 3 switching
- Multiprotocol routing
- CiscoAssure policy software

Exodus is expecting its field-trial units of the Catalyst 8500 in about two or three weeks, Bowman said.

Layer 3 switching in the Catalyst 8500 is expected to be based on Cisco's Express Forwarding technology, which is used in the company's 12000 GSRs and the 7500 series routers. Express Forwarding places packet forwarding tables on each line card to perform fast destination lookups and conserve route processor CPU cycles.

Cisco recently announced Layer 3 switching for the Catalyst 5000 line that relies on the company's NetFlow caching technology (NW, Feb. 16, page 6).

NetFlow forwards 2 million packet/sec. Cisco also is developing Catalyst modules that can forward 20 million packet/sec, but it is unclear whether the 8500 line will support these.

What it will support, sources said, is multiprotocol routing and CiscoAssure software for policy-based networking. CiscoAssure, announced last week, allows Cisco users to assign quality-of-service policies to applications.

With the introduction of the Catalyst 8500, Cisco is expected to reposition its 7500 series routers and Catalyst 5500 LAN switches. Up to now, these products have been Cisco's high-end backbone devices.

But the Catalyst 5500 is expected to become a high-density wiring closet switch with Fast Ethernet and Gigabit Ethernet uplinks to the 8500. The 7500 now will be marketed as a route server that provides WAN access, sources said.

Analysts said Cisco will attempt to make the Catalyst 5500-to-8500 upgrade as painless as possible. "Let's just say that they don't want to do anything to jeopardize the whole Catalyst line," said one analyst who requested anonymity. ■

Bay unveils SS7 strategy

By Jim Duffy

Billerica, Mass.

Bay Networks, Inc. last week unveiled a strategy for letting users bind IP networks with the public switched telephone network (PSTN) via Signaling System 7.

SS7 is a signaling protocol used in the public network for intelligent call setup and routing. By supporting SS7, Bay can meld its data networking gear with a carrier's voice infrastructure to foster an integrated, intelligent voice/data network.

Bay is not the only internet-working vendor that supports SS7. Cisco Systems, Inc. announced its SS7 strategy two weeks ago (NW, March 2, page 25), and 3Com Corp. and Ascend Communications, Inc.

have also disclosed SS7 intentions (NW, Feb. 2, page 8).

Bay said it will create an SS7 gateway to provide a signaling interface between its Versalar remote access concentrators (RAC) and voice switches in the public network.

The signaling gateway will support the Access Signaling Protocol to transport commands across Ethernet networks to the Versalar RACs.

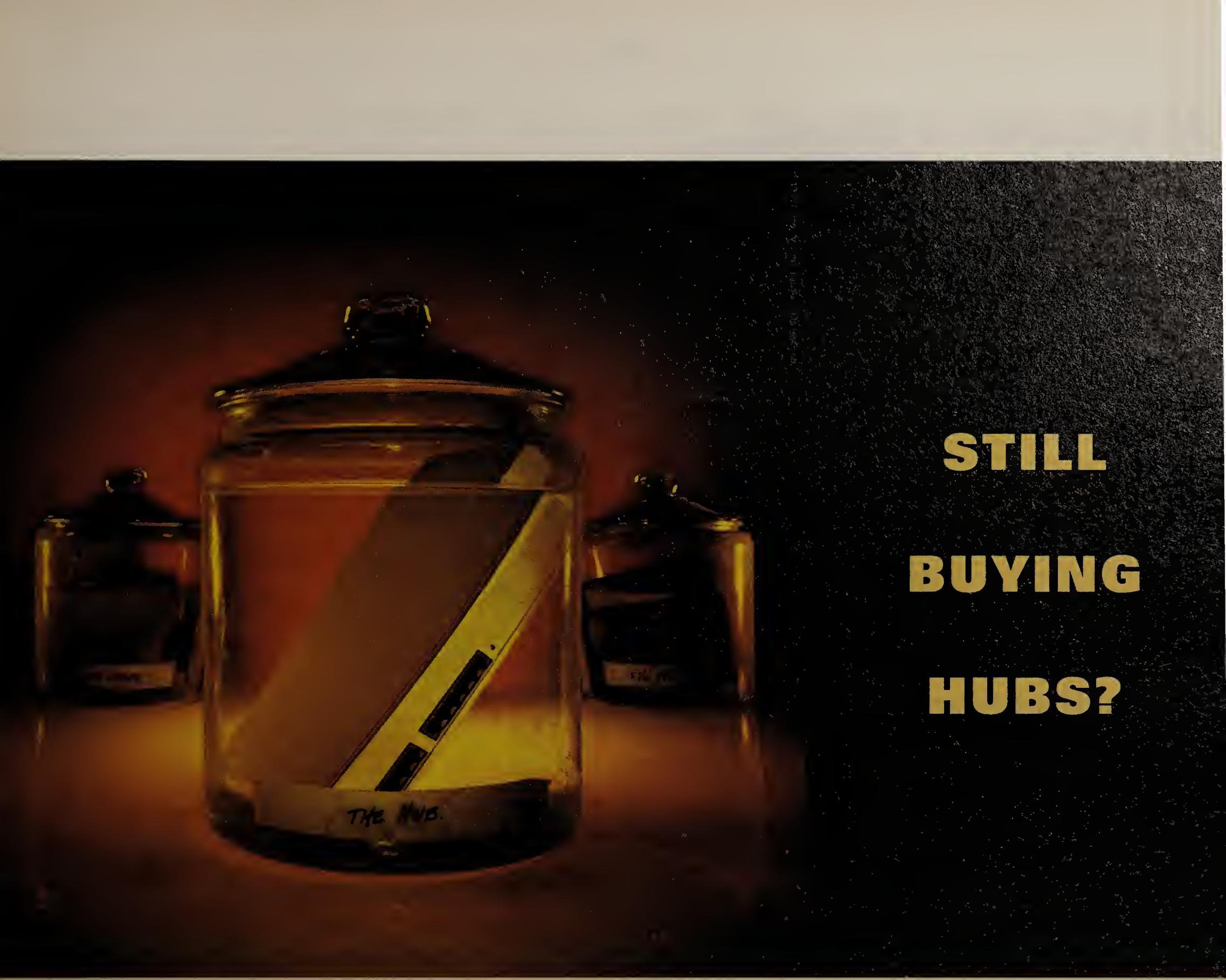
Bay is currently working with Stratus Computer Corp. and other undisclosed partners on this protocol and gateway. A gateway co-developed with Stratus will emerge late this year or in early 1999; Bay will unveil another gateway with more security features at the end of 1999.

The gateways will help carriers increase their network efficiency by redirecting data traffic off of the PSTN. Data traffic on the PSTN creates congestion, Bay said.

"I particularly like the way they've decided to keep the SS7 software in an external device rather than trying to incorporate it into all the [Versalar] equipment," said Ray Keneipp, principal analyst at Current Analysis, in Sterling, Va. "That's going to help a lot, particularly in cost as they try to scale [those devices]."

SS7 gateways will enable Versalar RACs to terminate multiple IP services and transports on behalf of the PSTN, Bay said. They will also alleviate the need for a carrier to implement ISDN Primary Rate Interfaces on central office gear, which can be very expensive, Keneipp said.

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At Netscape, is thin in?

By Andy Eddy

Mountain View, Calif.

Netscape Communications Corp. has faced various identity crises in its lifetime, but another has surfaced over its thin-client strategy—if it even has one.

In recent months, Netscape has dropped development of its all-Java version of the Communicator suite of applications, and recently confirmed that it has delayed the Javagator project—the Java version of its Navigator browser—while it discusses strategy with its Javagator partners. Netscape would neither comment on the partners, identities nor indicate when Javagator might reach the public.

Also casting doubt on the company's thin-client strategy is its decision to relinquish Navio to Oracle Corp. Netscape formed the division to develop client software for small-foot-

print consumer electronics.

Eric Byunn, senior product manager on Netscape's client team, is confident that Netscape has a plan. "Netscape continues to believe that network computers [NC] are important and NCs [are an ongoing strategy]," Byunn said. But if the company has a strategy, no one seems to be

explaining it.

Though a lot of people might argue otherwise, a thin client doesn't need to be developed in Java to work well, which might minimize the impact of the elimination of Java Communicator and the delay in Javagator development. Byunn made it clear that Java isn't the only method Netscape could choose to develop thin-client products, but he noted it was too early to reveal the company's options

THIN, NETSCAPE STYLE

Netscape hasn't been the best pal to NC proponents because of its shifting involvement in "thin" products.

- Netscape's Navio division, formed to build small-footprint consumer electronics products with Netscape software, was later handed off to Oracle. Not much has been heard from it since.
- Netscape's Java Communicator suite was killed, and the all-Java browser, called Javagator, is on hold for strategic reassessment.
- The company has stated its support of new standards, which likely will bring full support for the latest Dynamic HTML and XML developments. That support will enable Navigator to be a powerful medium for application deployment.

Microsoft move actually good for Java?

Software giant could dramatically boost the number of Java programmers.

By Chris Nerney

The reaction of Java true believers to Microsoft Corp.'s announcement last week of a Windows-only version of the programming language ranged from anger to, well, comparisons to the fight against dictatorship in World War II.

But some vendors and analysts said the beta release of Microsoft's Visual J++ 6.0, the new version of its popular Java development tool, will dramatically boost the number of Java programmers, and is, therefore, a step forward.

"Microsoft's actions are great



news for Java," said David Litwack, founder of SilverStream Software, Inc., a start-up that makes a Java-based Web application platform.

Many developers, however, said Microsoft's intent is to undermine Java's most attractive feature: Its promise of write-once, run-anywhere platform independence.

Visual J++ 6.0 includes code that restricts applications written with it to the Windows platform. And new Windows Foundation Classes work only with Windows functions and services.

IBM, a staunch partner of

Sun Microsystems, Inc., the developer and licensee of Java technology, released a statement blasting Microsoft for its alleged "crusade against Java."

"[Visual J++ 6.0] is yet another attempt by Microsoft to tie Java developers to Windows through platform-specific extensions," the statement said.

The Java Lobby, a group formed last August to give Java developers a voice in the growing battle between Microsoft and Sun for control of the language, went even further. "Like World War II, this is a battle in which the forces of freedom must align against the aggressive forces of tyranny," wrote Rick Ross, Java Lobby founder, in an editorial posted on the group's Web site. "Microsoft is bent upon controlling the future of technology and on limiting our options only to those which work to their economic advantage. From this point forward we must recognize that we are, in fact, at war with Microsoft."

One analyst called such sweeping condemnations of Microsoft an overreaction.

"Microsoft is entitled to extend Java and make it work better on their platform," said Anne Thomas, senior analyst at the Boston-based Patricia Seybold Group, Inc. ■

Be a NET KNOW-IT-ALL

For the answer to this week's question and more net trivia, visit Network World Fusion and enter 2349 in the DocFinder box.

This week's question:

Where was Microsoft based before moving to Redmond, Wash.?

www.nwfusion.com

outside of the Java realm.

In the past, however, Netscape has expressed its support for technologies such as Dynamic HTML and Extensible Markup Language. Either of these offer the possibility for powerful browser-delivered applications, and you don't need Java.

While the non-Java approach has the potential to expand the thin-client universe, it probably won't sit well with companies such as Oracle and Sun Microsystems, Inc., which are committed to Java-based NCs.

But some analysts believe Netscape's cautious steps forward might be the best plan, given that the thin-client market is still in flux and NCs haven't yet caught

on in the enterprise market. "I'm not fundamentally worried about [Netscape]. There's no market there yet, and it's not make or break," said Stephan Somogyi, principal of San Francisco-based consultancy Gyroscope.

Customers also backed Netscape's wariness in new and potentially risky projects. Chris Jennewein, vice president of technology and operations for Knight-Ridder, Inc., in San Jose, Calif., thinks Netscape is smart for slowing up on Java-based products.

"We've been a longtime customer, and I'd like to see [Netscape] competing in all dimensions. But I respect that it has to focus," Jennewein said. ■

Netscape tool kit eases browser modification

By Andy Eddy

In a move that is sure to gain it favor in the Internet community, Netscape Communications Corp. announced the Client Customization Kit (CCK), which enables companies to personalize the appearance and capabilities of Netscape's client suite.

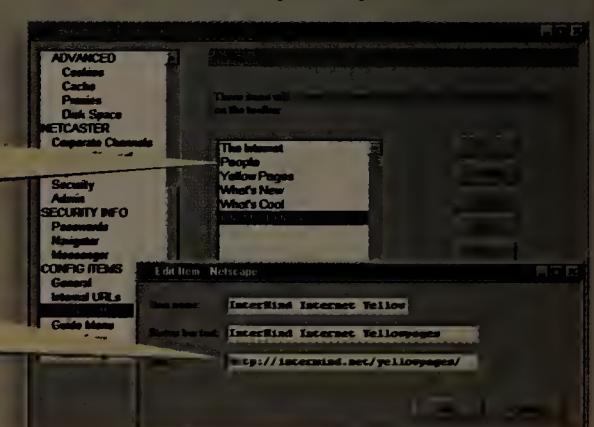
The CCK tool kit provides an easy way to tailor the client to a specific purpose. With CCK, users can add a company logo to the browser or customize the bookmarks a customer sees when the program is launched.

Netscape's custom gambit

Netscape's Client Customization Kit lets companies personalize their browsers.

Users can choose browser elements to add or modify.

Menu changes can be easily linked to the URL.



Matt Harris, a senior product manager for Communicator at Netscape, said the CCK is an extension of the Unlimited Distribution program Netscape initiated in January when it stopped charging for the client package and opened it up for free distribution.

Other elements of the suite that can be changed are the browser's default home page,

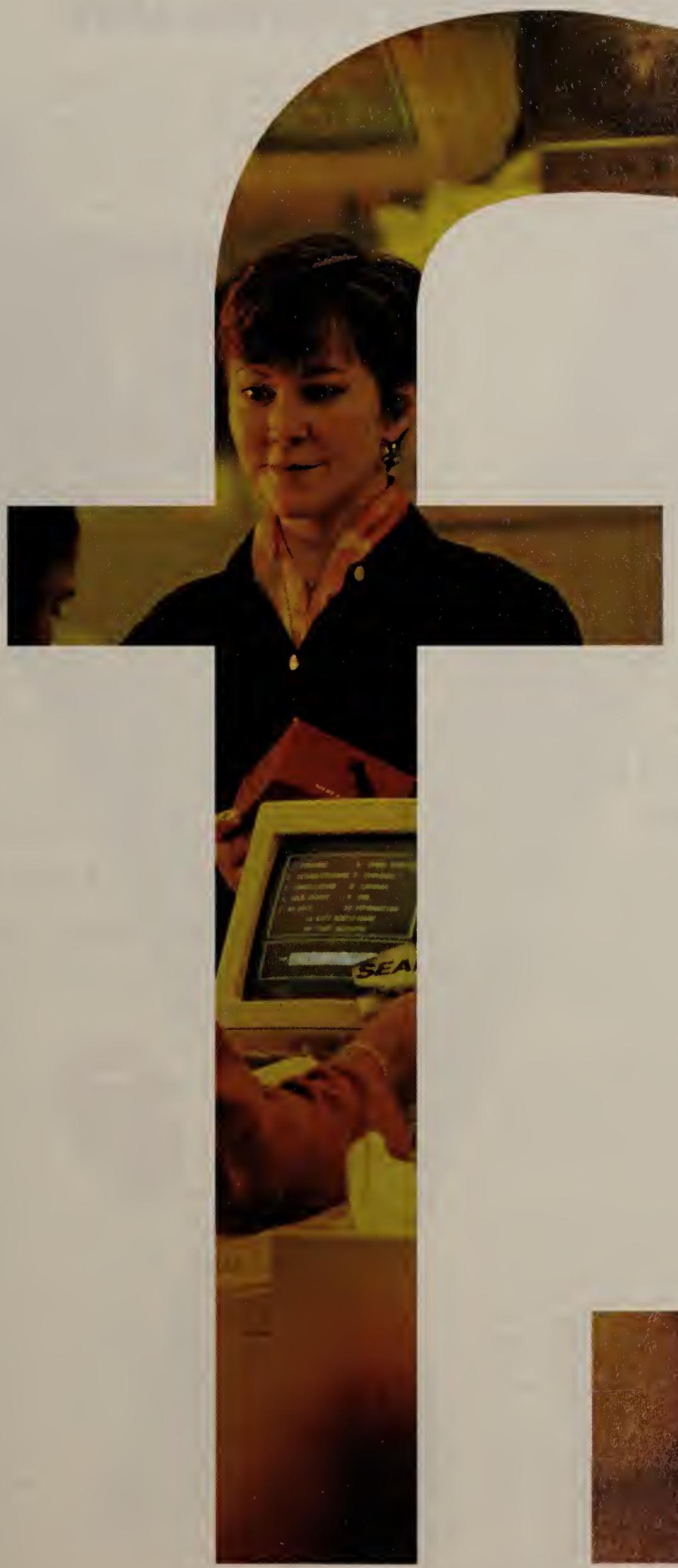
custom menu items in Help and Guide, and access numbers.

Netscape claims these modifications are easy. "[Users aren't] required to follow 150 steps—they can go to any step at any time," Harris explained.

Customers seem to agree. Kai Gray, general manager of Las Vegas-based ISP Intermind Corp., told Network World that it took him no time at all to customize the client suite. He said Netscape provided him with the URL to the beta version of CCK at 9 p.m. on a Saturday, and by

midnight he had fully working modified software for Macintosh, PC, and Windows 3.1 and 95 customers.

The CCK runs on Windows NT and 95 and the Macintosh PowerPC, though it can be used to customize the Windows 3.1 version of the client software. It should now be available from Netscape's Web site and can be licensed for use free of charge. ■



Old guard vendors dominate Internet show

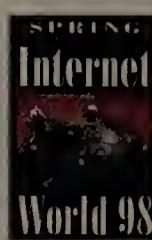
By Network World staff

Los Angeles

Keynote speaker Stewart Alsop summed up last week's Spring Internet World '98 best, quipping that upon seeing the trade show floor he thought he was at the venerable Comdex convention.

Rather than being blown away by a cast of funky new Internet product and service vendors, Alsop said he was first struck by the glitz and size of exhibits from computer industry veterans such as IBM, its Lotus Development Corp. subsidiary and Sun Microsystems, Inc.

And it was still more behemoths, including Microsoft Corp., Hewlett-Packard Co. and established carriers AT&T, MCI Communications Corp. and Sprint Corp., that made the most noise about new products and services. While most of these offerings broke little new ground, the announcements at least served to remind attendees



that these bigger players don't intend to let the Internet, intranet and extranet markets pass them by.

Meanwhile, the show's 50,000 attendees had to look pretty hard to find Internet industry icon Netscape Communications Corp., which didn't set up a booth.

Rather, the battered Internet company held camp in two largely empty meeting rooms above the show floor, where Netscape showed its Client Customization Kit and new developments in its NetCenter Website.

This strategy gave companies such as HP a chance to grab the show spotlight. Show attendees were greeted with a towering HP advertisement topped with a giant World Cup soccer ball as they approached the Los Angeles Convention Center, and then met with a multibuilding HP village/exhibit on the show floor. They also got to hear HP CEO Lew Platt's views on the Internet.

Platt used his keynote address to warn attendees about the Internet's potential harm. As the 'Net becomes more pervasive and commercial, it could make our society worse rather than better, Platt said. He called on technology companies and leaders to focus on improved network management and security to ensure that the 'Net progresses on the right track.

HP also introduced its Electronic World strategy, which was short on product details but long on talk about the partnerships HP has established with companies such as SAP AG, Baan Co. and PeopleSoft, Inc. Under Electronic World, HP will focus on four areas:

- The Extended Enterprise — computer networks based on Internet technology
- E-Business — Internet applications such as digital imaging and distributed printing

- E-Consumer — personal automated teller machines and home photography systems
- E-Commerce — technology gained with HP's acquisition of VeriFone, Inc., including electronic payment software



HP CEO Lew Platt's keynote at Spring Internet World '98 warned of the dangers of the Internet.

HP rival Sun had little to announce, but Chief Operating Officer Edward Zander was given a keynote slot, during which he showed off the latest in Java technology.

And while Zander told audience members that last week was

his "Be nice to Microsoft Week," he couldn't resist urging attendees not to blow their money on Windows 98.

Instead, Zander said companies should put their money in Java and that this is the year that real enterprise Java applications will emerge. In fact, at the conference MCI announced a Java-based customer service application that should put Sun's technology to the test.

NetworkMCI Interact will bring all of the carrier's customer-care services to the World Wide Web, enabling customers to access billing, traffic and network alarm information, change routing destinations or order services from their desktops.

UUNET Technologies, Inc., a WorldCom, Inc. subsidiary that could soon become part of MCI if the MCI/WorldCom merger goes through, used the show to introduce its Preferred Access 768 single-pair digital subscriber line service. While the service initially will be available in 54 cities, the ultimate plan is to make it available nationwide. ■

3Com, Siemens team up to offer voice over IP

By Tim Greene
Santa Clara, Calif.

3Com Corp. and Siemens AG last week introduced products to promote the integration of voice and IP traffic on corporate networks and service-provider networks.

For corporate networks, 3Com/Siemens announced a jointly developed IP-voice gateway that will lash together an Ethernet switch and a PBX. That three-box combination will let corporate users run voice traffic over their corporate IP networks rather than over more expensive public long-distance lines or private voice trunks.

Voice calls originating on a Siemens Hicom PBX and destined for another corporate site would be switched to the Real Time Communications Gateway.

The gateway converts the call to IP and passes it along to a 3Com SuperStack II 1100 Ethernet or a 3300 Fast Ethernet switch, which directs it to a router that has an IP WAN port. The call travels over the wide area on the corporate data network, avoiding the public network and reducing the need for dedicated site-to-site voice

trunks. A similar arrangement at the receiving end switches the call to its destination.

The gateway would give voice packets top priority through the network to reduce latency that can degrade voice quality.

Problem priority

One drawback is that the priority scheme will not carry through a public data network, according to Lisa Allocca, an analyst with Renaissance Worldwide, a consultancy in Newton, Mass.

However, 3Com said it is working on a way for the priority to be carried across public ATM networks. 3Com will enable its routers to put voice packets in top-priority queues and then map those high-priority packets to the appropriate ATM service quality for transport across the public ATM network.

Allocca said the IP-voice gateway scheme should help collapse corporate voice and data networks and potentially reduce the number of wide-area trunks an enterprise needs.

The gateway is scheduled to be available in the third quarter, 3Com said. ■

Reporter's notebook: Dilbert, has-beens and sore feet

A visit to Los Angeles wouldn't quite be complete without at least some weirdness, even while spending most of the time at an industry event such as Spring Internet World '98. Here's a glimpse of the show's lighter side:

Read my lips

Mick Jagger (at least he looks like Jagger) had become a staple of Sprint Corp. trade show booths at several recent events, including last fall's Internet World '97 in New York. But this year, celebrity impersonator Lou Albaro was nowhere to be seen. It seems Sprint was in violation of a contract with the Rolling Stones that bars the company from using Jagger's likeness in its promotions. To take the place of the big-lipped, undulating Jagger lookalike, visitors to Sprint's

booth were treated to a photo opportunity in front of the famous lips logo. Hardly seems like a fair exchange.

Police harassment

Then there were the PSINet PR people who booted our photographer out of



Police's Andy Summers

their booth as he tried to snap a few pictures of former Police guitarist Andy Summers.

Bothered by the Network World-funded paparazzi, Summers (himself a photographer) told our photographer — in other words — "Don't stand so, don't stand so close to me." When the photographer asked the PR people what the problem was, they said, "You need to respect his privacy." Summers and his new band then continued to perform — in private — in the middle of the crowded trade show floor.

The Dilbert zone

Even the biggest network celebrity of them all — Dilbert, the King of Cubicles — made an appearance. Dilbert mingled with other worker bees in attendance and didn't even mind when we took his picture.

Songbirds flocking

It was no surprise that the show attracted its share of celebrities, including Bernie Taupin, Elton John's songwriting pal, and musician-turned-cyber-entrepreneur Thomas Dolby.



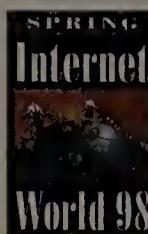


Sprint finally gets into Web hosting game

By Denise Pappalardo

Los Angeles

Critics can no longer kick Sprint Corp. around for not having a Web hosting strategy. Last week at Spring Internet World '98 the company finally announced a hosting service.



Sprint has been roundly criticized for dragging its hosting heels, but company officials said the wait allowed it to come out with a robust, reliable service. And analysts believe Sprint may be right.

Sprint's IP Web Hosting service offers users shared and dedicated service options with fully mirrored content at Sprint's data centers, in Relay, Md., and San Jose, Calif.

The service is based on Silicon Graphics, Inc.'s Unix servers

tied to Auspex Systems, Inc. file servers in each data center. Sprint also teamed up with RAD Network Devices, Inc. to develop a custom version of its Web

Server Director load-balancing software, said Eileen Riordan, market development manager for Sprint's IP services.

The load-balancing software will route Web visitors to the least busy or least congested server within Sprint's data centers, Riordan said.

The service stands out for the level of mirroring and reliability that Sprint has put together, said Matthew Kovar, senior analyst at The Yankee Group, a Boston-based consulting firm.

Sprint is also offering its customers strong service-level agreements that guarantee a

customer's Web site will be available 100% of the time. If the Web site is unavailable at any time, and the customer reports the incident to Sprint, the customer will get 50% off the monthly service charge.

Sprint IP Web Hosting service will be offered in three flavors. Level 1 is for static Web page hosting in a shared server environment and costs \$700 per month. It includes 100M bytes of storage, 500M bytes of overall data throughput, content mirroring on two servers at Sprint's data centers and one hour of implementation and consulting time from technicians.

Level 2 is for users who want to support electronic-commerce applications on a shared server and costs \$2,500 per month. This service includes 1G byte of stor-

age, 5G bytes of overall throughput, CyberCash, Inc.'s and Mercantec, Inc.'s electronic-commerce software tools, content mirroring on five servers at Sprint's data centers, and four hours of implementation and consulting time.

Level 3 is for high-end customers who need a dedicated Web server and is priced at \$4,600 per month. This service includes 2G bytes of storage, 10G bytes of data throughput and the same electronic-commerce software options as Level 2. It also boasts File Transfer Protocol support, six hours of implementation and consulting, content mirroring in two servers at Sprint's data centers and the ability to add custom software, such as corporate databases.

Analysts said Sprint has not

missed out on the Web hosting market. Last year, Web hosting revenue totaled \$400 million, but that number is expected to grow to \$6.8 billion by 2001, said Joe Bartlett, program manager at The Yankee Group.

Sprint's service will be available next month. ■

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Cisco buys DSL, multimedia companies

By Tim Greene
and Jim Duffy

San Jose, Calif.

Cisco Systems, Inc. last week buttressed its digital subscriber line (DSL) and multimedia product offerings with the acquisition of two companies.

Cisco agreed to acquire DSL innovator NetSpeed, Inc. for \$236 million and multimedia software developer Precept Software, Inc. for \$84 million. At the same time, Cisco named Precept President Judith Estrin as its new chief technology officer (CTO), replacing Edward Kozel. Kozel is assuming a part-time position as Cisco's senior vice president of business development.

The acquisitions indicate Cisco's intention of taking a leadership role in the burgeoning markets of high-speed Internet access and voice, data and video integration. The number of high-bit-rate DSL (HDSL) lines in the U.S. is expected to grow from 101,000 in 1997 to 253,000 in 2001, according to International Data Corp. (IDC), in Framingham, Mass. IDC expects the worldwide HDSL equipment market to be \$255 billion by that time.

NetSpeed, based in Austin, Texas, is a privately held maker of DSL-based Internet access gear for the North American market. DSL technology offers high-speed information transmission of up to 8M bit/sec over

existing telephone lines, enabling high-bandwidth applications such as telecommuting, telemedicine, distance learning and the downloading of graphic-intensive Web pages.

NetSpeed's products are deployed in customer premises, central offices and broadband remote access locations. For customer premises, NetSpeed de-

PROFILE: NETSPEED, INC.

Founded: April 1996

CEO: John McHale

Financials: \$32 million in funding from undisclosed private and corporate investors

Primary products: SpeedRunner modem, FireRunner server and LoopRunner multiplexer to support DSL services

Competitors: Alcatel, Amati, Diamond Lane and Westell

velops a low-cost, high-speed DSL modem that lets users access data, voice and video applications over existing copper telephone lines.

NetSpeed developed an early version of DSL technology that can carry voice and data without requiring a separate device to split the voice channel from the data stream. Called EZ-DSL, it is a variant of Universal DSL, which is backed by Compaq Computer Corp., Microsoft Corp. and Intel Corp.

NetSpeed also developed what it calls dial-up DSL, which reduces the number of DSL modems a service provider needs in its central switching office. Rather than nailing up a DSL connection between the customer site and the switching office with a modem on each end, dial-up DSL calls for a modem at the customer site and a shared modem bank at the switching office.

NetSpeed's product line will complement Cisco's 1997 acquisition of the Dagaz business of Integrated Network Corp., Cisco said. Dagaz makes DSL access multiplexers and subscriber-side access devices targeted at international markets (NW, Aug. 4, 1997, page 69).

"Standards will differ, and look and feel and feature sets will differ between the two," said Fred McClimans, CEO of Current Analysis, Inc., in Sterling, Va. "I would not be surprised to see Cisco acquire yet another DSL company toward the end of this year to fill specific market niche requirements."

NetSpeed's 140 employees will continue to work in Austin as part of Cisco's network-to-user business unit within the company's Service Provider business line. The acquisition is expected to be completed by April.

That's about the time Cisco

also plans to complete the acquisition of Precept, a privately held company based in Palo Alto, Calif. Precept makes a client/server application called IP/TV, which allows users to send live or prerecorded digital video and audio to a large number of users over IP-based LANs or WANs.

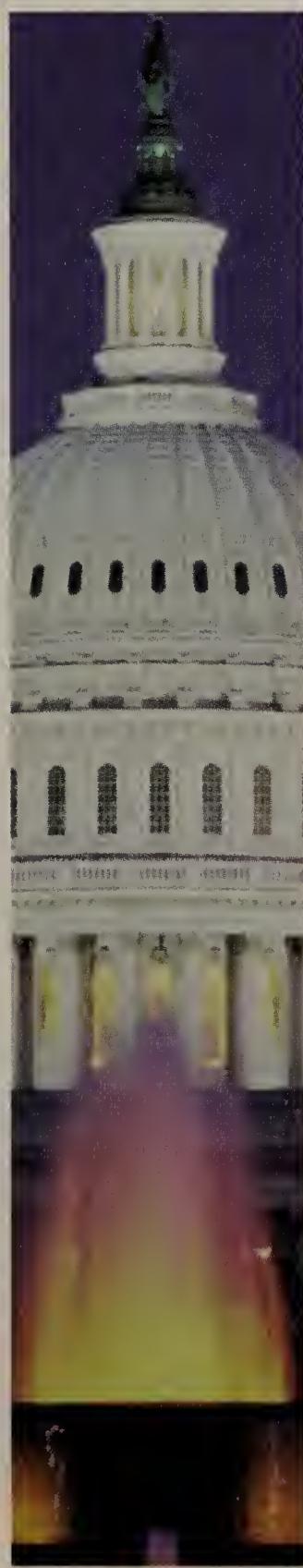
Cisco has held a minority equity interest in Precept since April 1996 and will continue to sell Precept's IP/TV to enterprise network users. By acquiring Precept, Cisco will now be able to integrate multicast, quality of service, streaming video and network management technologies to create a network platform for delivering high-quality video over IP, the company said.

Precept was founded in 1995. Its 50 employees will become part of Cisco's IOS technology group and sales organization.

Estrin, meanwhile, will assume responsibilities for business development, consulting engineering, and legal and government affairs, in addition to her role as CTO.

As CTO, Estrin will have big shoes to fill. Kozel is a nine-year veteran of Cisco. He is credited with helping build the company from a \$70 million router vendor in the late 1980s into the \$8 billion internetworking behemoth it is today through technical innovation, acquisition, joint development and deft industry insight and intuition.

Cisco said Kozel, who will remain on the company's board of directors, will return full-time in a couple of years. ■



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Spam spotted with large gray areas

Debate rages over the difference between spam and legitimate marketing.

By Paul McNamara

No matter how you slice it, one man's spam is another's bread and butter.

Most everyone detests an inbox full of unsolicited commercial e-mail, better known as spam. However, when it comes time to differentiate between pure spam and legitimate marketing e-mail, definitions differ, gray areas emerge and debates often rage.

What, then, should a prudent company do if it wants to use e-mail as a marketing tool and also be perceived as a solid 'Net citizen?

The answer, of course, depends on who you ask. Responses range from "don't do it" to "don't worry." In between there are rough patches of consensus visible on what can sometimes be a flame-filled battleground.

Everyone but the hard-core spammers themselves objects to

found themselves fielding complaints about their e-mail marketing practices. As e-mail becomes an ever more ubiquitous and powerful communications tool, its use in marketing is likely to increase for the same reason that direct snail-mail and telephone soliciting are so popular: It works.

"The marketplace can find the right scenarios and situations where e-mail that is targeted and unsolicited will be welcome," said Chet Dalzell, a spokesman for the Direct Marketing Association. The DMA later this year intends to launch a worldwide e-mail "opt-out" list, which will be designed to let unwilling recipients ward off unwanted electronic advertisements.

"As long as marketers are honoring and setting up effective systems for [opting out], a consumer need not be concerned about privacy or annoyance," Dalzell said.

"Baloney," counter the antispammers.

Such opt-out lists, already in widespread use by individual companies and e-mail list purveyors, are invariably ineffective, according to many antispam advocates. These critics contend that asking people to opt out of future mailings is unfair because it puts the onus and expense on recipients rather than senders.

Today, the practice of e-mail marketing remains relatively limited compared to other forms of advertising. What happens, however, if it becomes standard operating procedure?

"Normal business e-mail will go down the drain, because people will hate looking at their e-mail," said Paul Hoffman, director of the Internet Mail Consortium (IMC).

Congress and a number of states are currently considering various forms of antispam legislation. Hoffman believes that process will accelerate if e-mail becomes a standard marketing tool for brand-name companies.

"One of the best benefits of conducting business online is convenience," said Jim Nitchals, an independent contractor based in San Jose, Calif. "That convenience is quickly offset if my mailbox is stuffed with

ads from those businesses I buy from."

So when is it OK to send marketing e-mail? A pre-existing business relationship with the intended recipient provides a good starting point, but does not constitute permission in

announcement, not because I'm a registered user or because I've asked for announcements, but because they bought a list harvested from Usenet," said Peter Seebach, president of Plethora Internet, an Internet service provider, in St. Paul, Minn. "That's spam. If Symantec had sent the announcement to the address I used when I registered [its] Norton Utilities, it would still be spam. I didn't ask for those announcements."

You make the call: Spam or legit?

Not everyone agrees on what defines spam. Here are five situations that might fall into the gray area. What do you think?

- ① You check out a Web site and request information online, which the company sends to the e-mail address you provide. They also start e-mailing their monthly newsletter.
- ② You visit a Web site and read information regarding Product Y. Using a cookie, the company harvests your e-mail address and sends more information about that product.
- ③ Company Z is an established supplier of yours that sends e-mail updates regarding products you buy. Then they e-mail you about a new product, which is not related, but could be presumed to be of interest to you.
- ④ A newsgroup participant posts a message asking for opinions about the best spam-filtering software available. A company that makes such software sends an e-mail directly to the questioner.
- ⑤ You give a trade publication your e-mail address. Later, they send you an e-mail touting their new daily e-mail newsletter.

Spam
 Legit

Spam
 Legit

Spam
 Legit

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everyone's eyes.

"E-mail spam exists because spammers can harvest addresses that were provided for a particular *limited* purpose and use them for their own selfish purpose, against the will of the recipient," said Rob Parker, a software developer for a Silicon Valley company he prefers not to name. "Ethical senders won't presume more permission than was reasonably implied, and will err on the side of caution."

Providing recipients with an opt-in rather than an opt-out option helps, as does providing multiple choices and a clear explanation of how an address will be used, experts said. Drawing interested parties to your corporate Web site, where they are free to ask for specific information, is the safest method of all and is better than sending unsolicited e-mail, argued the anti-spam purists. This can be accomplished using traditional advertising and careful posts to newsgroups that allow commercial messages, they said.

"Symantec sent me a product

Another example further illustrates Seebach's point.

"Some time ago, I gave [Amazon.com] my address because I wanted to be notified when a particular book was being published," said Matt North, a computer sciences graduate student at Michigan State University. "I intended for them to use my e-mail address for that purpose; however, several months later I received e-mail from them advertising a contest they were running."

Network World received complaints recently after sending e-mail to its subscribers touting the debut of Network World Fusion Focus, a series of free e-mail newsletters. Some recipients called the offer spam, saying it exceeded the bounds of how they thought their e-mail addresses would be used when they subscribed to the print edition of *Network World*. Other readers welcomed the information.

Symantec, for one, is having a tough time figuring out exactly how far a responsible business must go to protect its reputation and its right to market aggressively.

"In February we sent out an e-mail broadcast which included among its recipients a number of people who had not in any way asked to receive e-mail from us," said Curtis Pierce, manager of Internet services at Symantec. "We got a lot of flak."

Vehement complaints also poured in to news.admin.net-abuse.email, a newsgroup devoted to discussions about spam.

"We went back and looked at the process and realized that it was a mistake," Pierce said. Symantec purchased the list from an outside source, a practice the company has halted temporarily but may resume in the future.

"Moving forward, it's not going to be against Symantec's policy to buy lists," Pierce said. "But it's going to be against our policy to buy lists that weren't gathered from sources where people knew they were giving their name up and had an option to not give their name up."

The purveyors of such lists routinely vouch for their accuracy and validity but, according to critics, don't always deliver the goods.

"It is our responsibility to have the diligence to ensure that we know where they got those names from," Pierce said. "Does that mean we have to actually go look at the [intended recipient's original permission] statement? I don't know — maybe."

According to the IMC's Hoffman, there is a lot riding on today's ongoing efforts to define what is and what is not acceptable e-mail marketing.

"The Internet mail market is very new," Hoffman said. "Choices that we make right now are forming what people 20 years from now are going to see when they get Internet mail." ■

HOW DO YOU DEFINE SPAM?

We've set up an online forum and questionnaire to discuss the issue of spam. Join Chet Dalzell, of the Direct Marketing Association, and Peter Seebach, of ISP Plethora Internet, of St. Paul, Minn., in a week-long discussion about the issue.

6 2 1 7

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the kind of junk that makes up the bulk of unsolicited e-mail: get-rich-quick schemes, pornography and the like. The Sanford Wallaces of the world enable and champion a brand of e-mail marketing that few mainstream — particularly high-tech — companies dare to emulate.

The true gray areas involve those mainstream companies and center around different interpretations of what constitutes solicited and unsolicited e-mail; proper and improper means of gathering e-mail addresses; and, perhaps most contentious of all, the right and wrong ways to keep unwanted messages away from recipients who find such e-mail offensive.

A growing number of name-brand companies, including Symantec Corp., Amazon.com and even *Network World* have

IBM to boost front-end processor's IP features

By Marc Songini

Anaheim, Calif.

SNA users adding TCP/IP support to their data centers may be interested in some major front-end processor (FEP) enhancements coming this summer from IBM.

At the recent Share user conference, IBM said it would make its 3746 Multi-access Enclosure (MAE) faster and better able to connect older IBM mainframes to IP-based networks.

The 3746 MAE is IBM's 2216 router linked to the 3746 FEP and sold as a single unit. The 3746 MAE is IBM's newest FEP, combining traditional FEP functions such as SNA traffic handling with the IP-handling functions of a router. Consequently 3746 MAE is one of the cornerstones of IBM's SNA-to-IP migration offerings.

IBM's enhancements will include a tighter coupling of MAE's routing functions with the 3746. The company will

TCP/IP processing from the mainframe more efficiently than the 3172 did. That will significantly cut down on S/390's CPU cycle time, said Frank Dzubeck, president of the Com-

munications Network Architects, Inc. consultancy in Washington, D.C.

Other additions to the 3746 MAE this year will include support for the following:

- Enterprise Extender: IBM's technology for supporting high-speed Advanced Peer-to-Peer Networking flows over TCP/IP nets.
- Load-balancing features for users with multiple 3746 MAEs.
- Support for 21 T-1 or 32 E-I speed wide-area links.
- Router redundancy. ■

Upcoming additions to IBM's 3746 MAE



- Bus and tag support
- Tighter software and hardware integration between 3746 and MAE
- Fast Ethernet, FDDI and HSSI support

link the 3746 and router processors together internally, boosting throughput by an estimated three to 10 times the current throughput.

Currently, the boxes are externally linked via a 32M bit/sec full-duplex token ring connection.

To help ease administration of the box, the 3746 MAE also will have a single IP address, instead of the current two addresses.

Because it supports SNA and IP, the current 3746 MAE is a useful tool for large SNA users making the transition to IP, said Lan Tran, technical support specialist at the Bank of Montreal. "From a management perspective, one IP address and control point [is easier to administer]," he said.

For users with older mainframes, IBM will enhance the 3746 MAE to support legacy bus and tag connections, and users will have a new alternative to tying IP nets to those mainframes. The 3746 MAE now supports IBM's fiber-based Enterprise Systems Connection links to the mainframe.

Today, users can employ a channel-attached router or IBM's 3172 gateway to bring in IP traffic, said Gilles Garcia, a member of IBM's WAN and server access team in La Gaudie, France.

The 3746 will be able to off-load

communications from the mainframe

more efficiently than the 3172 did.

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Hollywood struggles for Web fame

By Ellen Messmer

Los Angeles

The titans of entertainment — Universal City Studios, Inc., Paramount Pictures Corp., MGM, The Walt Disney Co. and Sony Corporation of America — want to light up the World Wide Web with the kind of boffo hits they create for TV, film and recordings.

But showbiz on the 'Net isn't coming easily, despite all the "interactive," "multimedia" and "celebrity Webcast" programs the studios are offering online. To top it off, the big studios and record distributors are finding they can't begin to get the cyberspace audience they crave unless they make deals with the likes of Yahoo, Inc., Excite, Inc., Netscape Communications Corp. and America Online, Inc. (AOL).

Sites that get huge traffic are asking for low six-figure advances for the right to display content on a location, according to Lewis Henderson, head of New Media for the William Morris Agency, which represents creative talent, software developers,



World 98

publishers and technology companies in the digital media business. "There's no mass-market strategy unless the studios buy into these search engines," Henderson said.

"It's highway robbery," grumbled Richard Wolpert, executive vice president at Disney Online, which runs disney.com.

Paying the top-traffic sites to run some of their content with links to other services, or even to get top billing on a search engine, is a bitter pill for Hollywood to swallow.

"In the other models in Hollywood, people pay us for the content," complained Paul Rioux, president of Universal New Media, which has 120 sites up to promote music, feature films and online games.

Web businesses selling music CDs and broadcasting live rock music events online also go begging for a financial break from the big names such as Yahoo.

N2K Entertainment, Inc., which manages the Music Boulevard site at musicblvd.com, counts Excite, AOL, Netscape, PointCast, NTT, MTV and Prod-

igy as critical partners, and makes deals to run content or advertising with them.

"We're the exclusive online retailer at aol.com in the music area," said Larry Rosen, chairman and CEO at N2K. "If you click on Celine Dion, it brings up Music Boulevard. With Netscape, it's a similar situation."

"We have Yahoo, they have AOL," said Rod Parker, senior vice president of product marketing for CDnow, Inc., Music Boulevard's chief competitor on the Web. "And we have one-half of Excite — the Web Crawler half."

Not all relationships are based on money, though N2K did pay AOL and Yahoo, said J.J. Rosen, N2K's senior vice president and general manager. "Sometimes what lands us the deal is what we deliver in terms of content," Rosen said.

What can be delivered makes a difference, and when the studios go into a meeting with Yahoo, the emphasis is on how many interactive properties

they can offer.

In addition to Microsoft Corp., Universal New Media is also partnering with Intel Corp. and IBM on Web projects. But despite the helpful cash and technology that these companies bring to the entertainment field, Hollywood so far does not seem too impressed with high-tech's idea of creative fun.

"The technology manufacturers suggest things to you, like 'wouldn't you like to sell that out-

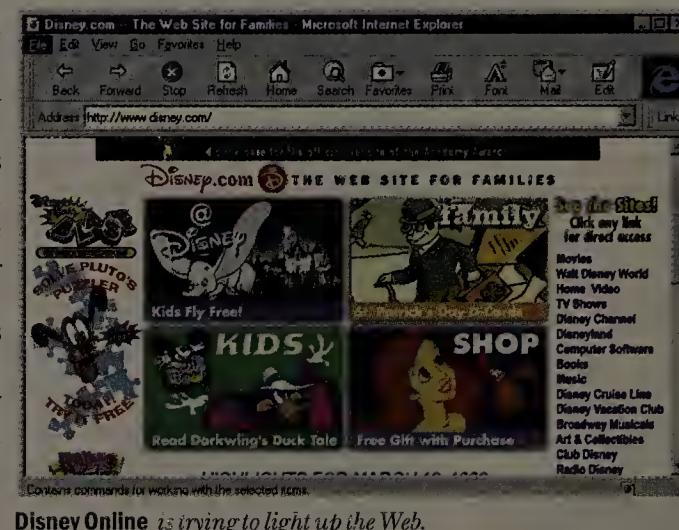
with is pretty lame,'" commented Linda Keeler, vice president of interactive marketing at Sony Pictures Entertainment.

After high-tech companies fork over the money, they come up with business plans that require rich multimedia components that strain the budget and result in slow 'Net downloads for users, Keeler said.

High-tech vendors seem clueless to the fact that good old creative talent is really the key to good content, Keeler noted.

The typical TV programming strategy, in which one show follows another and tries to keep the viewing audience, doesn't work on the Web, said Robert Tercek, vice president of online programming for Sony Pictures Entertainment, which oversees Columbia Tri-Star's strategy for Web entertainment.

Hollywood's New Media moguls are ever mindful of what Microsoft Corp., with its investment in WebTV and content-laden channels such as MSNBC, is plotting because they are sure that every move Bill Gates makes will affect them. ■



Disney Online is trying to light up the Web.

fit that Seinfeld is wearing by clicking on Seinfeld's outfit?" said Universal New Media's Rioux. "But at the end of the day, that just doesn't work."

"Deep pockets like Microsoft and Intel come to the studio and the stuff they've presented us

on the fly, [call detail reporting] records and trouble-ticketing, all online," said Ian Dix, LCI's vice president of large account marketing.

In a little-noticed extra fillip, LCI also brings to the table a

ances must rely on feature-robbing links between multiple carrier platforms, the Equant deal lets Qwest and LCI offer standard service-level agreements in 56 of the 89 countries served by Equant's network.

Observers said the merger is likely to close quickly. Although Qwest's stock is publicly traded, the company is majority-owned by Philip Anschutz, a railroad tycoon who retained valuable rights of way for Qwest when he sold Southern Pacific Co. in 1996 and who reportedly pushed for the LCI deal. Likewise, LCI's stock also includes large shareholdings by investment bankers who financed its turnaround in the early 1990s and who are considered eager for a final payoff.

In addition, antitrust regulators are unlikely to get involved because LCI's market share is small and Qwest's practically nonexistent. Instead, regulators now have their sights trained on WorldCom, Inc.'s buyout of MCI, ending the possibility that those carriers' megadeal will be a cakewalk for their lawyers.

All those factors led Qwest President and CEO Nacchio and LCI Chairman and CEO H.

Brian Thompson last week to say that theirs was a marriage made in heaven. But some big holes remain in the merged company's collection of network assets before it can make a play for huge contracts with most enterprise networks, particularly those outside LCI's traditional midwestern and mid-Atlantic customer bases.

The most notable is the company's lack of local facilities. Unlike some other new carriers, Qwest's network buildout plan does not include fiber rings in city centers. And although LCI owns 18 long-distance switches from Nortel and others, it owns only one local telephone switch, in San Antonio, Texas, obtained in a recent acquisition.

Instead, LCI has attempted to resell local lines from regional Bell operating companies. It has waged an extremely aggressive legal fight against the RBOCs led by Anne Bingaman, the former U.S. assistant attorney general and current president of LCI's local division. ■

Get more information online at
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Qwest

Continued from page 1

fast-packet switches. Many of those customers now also buy LCI's plain-vanilla Internet access service, offering dial-up and dedicated access options.

But perhaps most significantly, LCI is the only long-distance carrier other than the Big Three that offers a traditional circuit-switched virtual private network (VPN) service. LCI's Integrity Virtual Network Service competes with such stalwarts as AT&T's Software Defined Network for discounted corporate voice minutes.

Excited LCI officials last week said the upshot could be that the Qwest/LCI combo will be the first in the industry to bring out an IP-based VPN for data traffic that incorporates classic voice VPN features.

Neither Qwest nor LCI offers an IP-based VPN yet. But when complete, the Qwest network is designed to be able to carve out gigantic lanes for priority IP traffic using the Cisco 12000 Gigabit Switch Router from Cisco Systems, Inc. For its part, LCI offers online reconfiguration of trans-

port circuits from customer locations via its Authority Network Management System, which moved last year from a Sun Microsystems, Inc. SPARC-Station platform to a PC version (NW, Feb. 10, 1997, page 17).

Little fry takes over bigger guy again

Key facts about Qwest and LCI:

Company:	Qwest	LCI
Headquarters:	Denver	McLean, Va.
CEO:	Joseph Nacchio	H. Brian Thompson
Number of offices:	10	60
Number of employees:	1,800	4,000
1997 revenue:	\$697 million*	\$1.6 billion
1997 net income:	\$14.5 million	\$97 million

* 83.5% of Qwest's revenue is for construction services instead of data or voice traffic.

Authority currently is used for LCI FramePlus permanent virtual circuits. But a top LCI official said the new Qwest IP network capacity will accelerate LCI's plans to diversify the services that Authority supports.

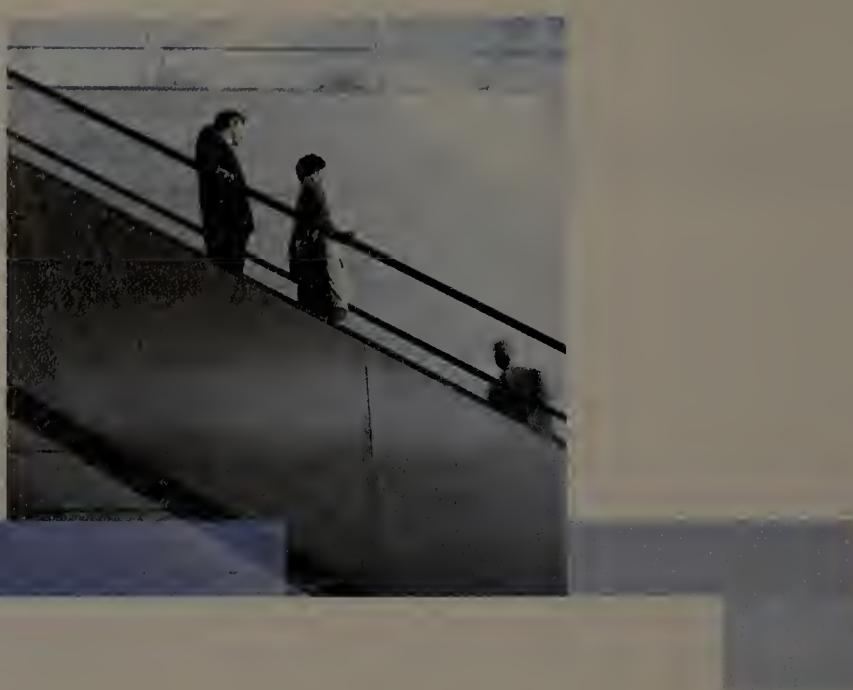
"Later this year, for an IP VPN I could give you reconfiguration

marketing agreement with newly aggressive international carrier Equant Services Corp. LCI is promoting frame relay and other services under its own brand on Equant's 220-node global net based on Nortel's Magellan Passport multiservice ATM switches.

While the large carriers' alli-

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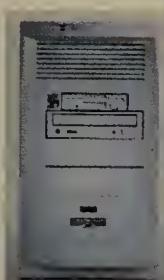
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Briefs

Digital Equipment Corp. this week announced a new entry into the workgroup server market with the Digital Server



500. The Windows NT box runs file and print, communications, e-mail and Web applications. It holds one 233-MHz Pentium chip, and has three ISA and two PCI slots, and 25.6G bytes of hard drive. The Digital Server 500 is shipping now and costs \$1,099.

© Digital: (800) 722-9332

Transition Networks last week announced that revenue from its conversion technology product lines grew 35% in 1997. The Minneapolis-based company sells products that allow copper to migrate to fiber cabling across many networking protocols, including Ethernet, Fast Ethernet, FDDI, ATM, Token Ring and Gigabit Ethernet. Revenue in the Fast Ethernet line had the highest growth — 720%.

Novell, Inc. has added fiber distributed data interface support to ManageWise, allowing administrators to control NetWare and Windows NT clients and servers over FDDI networks. Beginning this month, the FDDI module will be available free to ManageWise 2.5 users.

© Novell: (800) 453-1267

Seagate Software, Inc. has a new client-side data protection component for Exec for Windows NT. Client Exec is software that transparently backs up Windows 95 and NT client data to an NT 4.0 server. Administrators control what data gets backed up, but a graphical user interface front end allows end users to restore data. Client Exec is available now for \$695.

© Seagate: (800) 327-2232

In-Site

Godzilla movie gobles LAN bandwidth

By Ellen Messmer
and Robin Schreier-Hohman
Santa Monica, Calif.

A new generation of movie makers is creating a modern version of the legendary Godzilla, and to do it, the limits of a pretty robust LAN are being stretched.

At the Centropolis Effects, LLC studio, a staff of 50 computer-based artists is furiously stitching together frame after frame of high-resolution images to bring the timeless tale of Godzilla, the abused creature, once again to life.

The artists have tight deadlines to meet for the movie's planned May 20 release. "We're creating a terabyte of data per week," said Centropolis' MIS Director John Duino. "The main thing is having enough computing resources to render out the images — the network we have is important."

Centropolis essentially has two backbones, one High Performance Parallel Interface

(HIPPI) and one Fast Ethernet. The HIPPI backbone has two Essential Communications' EPS 16 switches. The EPS 16 is a 16-port non-blocking, cut-through, cross-bar switch that allows for 16 simultaneous full duplex connections at 800M bit/sec, for an aggregate throughput of 25.6G bit/sec per switch.

For the Ethernet backbone, Duino uses a 3Com Corp. SuperStack II Desktop switch, which provides 24 10M bit/sec ports and one 100M bit/sec uplink. Users on PCs are connected to that backbone.

To bring higher performance to the desktop without having to redesign the entire network, Duino decided to replace three 3Com SuperStack II Hub 100s, which each have 12 ports of 100Base-TX. Since each is essentially a hub and repeater, a great number of collisions were being experienced. "100Base-T is a garden

hose when I need a river," Duino said.

He replaced the SuperStacks with ODS Networks' LANBlazer 7000, which is a chassis-based high-speed switch. He has

two Fast Ethernet modules with 20 ports each, and a management module. The LANBlazer connects to an Origin 2000, which is an extremely fast Silicon Graphics, Inc. (SGI) server that provides Fast Ethernet and HIPPI ports. Using this setup, Duino was able to provide a transition from the Fast Ethernet desktop to the HIPPI backbone at a low cost. Duino estimates the upgrade cost him around \$37,000, and said ATM would have cost \$100,000 for the switch alone. ATM network interface cards still sell for over \$1,500.

Each digital artist uses an SGI workstation. The majority of devices have HIPPI and

non-HIPPI interfaces. Ethernet is used for applications that are not time-sensitive, such as e-mail, and HIPPI is used for bandwidth-intensive development.

The live shots of the movie's human stars, including actor Matthew Broderick, were done on location in New York. The studio artists converted these with digital format film scanners, which digitize the material, and film recorders, which turn digital video back into film.

The artists at the SGI desktop machines then blend the animated Godzilla creature with the live shots from New York, Duino said.

With the river of data pouring across the LAN, Duino said he has to carefully monitor the flow to prevent congestion backups. To do this, he uses a product called Xni from Fastlane Software Systems, Inc. to analyze, monitor and record network traffic. ■



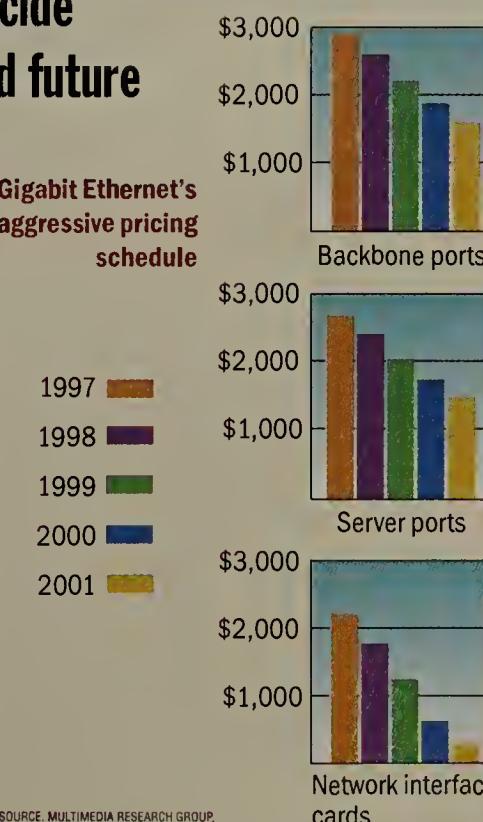
QUICK TAKE: FAST LANs

Here are the facts; you decide your company's high-speed future

WHAT IS YOUR COMPANY'S PLAN?

According to a 1997 Deloitte & Touche/Network World study of 300 network planners, only 16% use ATM in the LAN and only 10% use Gigabit Ethernet. Out of the 31% surveyed who plan ATM deployment, 41% said they would alter their plans if Gigabit Ethernet became a viable alternative.

Gigabit Ethernet's aggressive pricing schedule



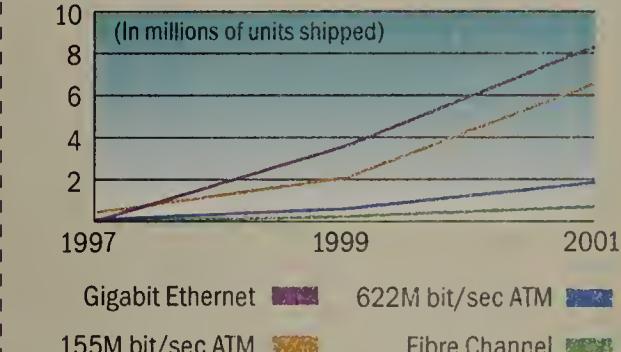
SOURCE: MULTIMEDIA RESEARCH GROUP, SUNNYVALE, CALIF.

High-speed LAN ports by technology

Fast Ethernet



Other high-speed LAN options



SOURCE: ELECTRONIC TREND PUBLICATIONS, SAN JOSE, CALIF.

PC titans want to rule workstations too!

By Christine Burns

Seattle

The lords of the Wintel empire contend that in the past 12 months they have fully muscled their way into the Unix-

dominated technical workstation market.

Continuing their frontal assault on this market, Intel Corp. and Microsoft Corp. recently announced several industry initiatives geared at expanding

their workstation presence.

Together the two companies will beef up NT's ability to run complex graphics applications with support for a new version of the Accelerated Graphics Port

(AGP) interface. This new interface between NT and the underlying Intel hardware, called AGP Pro, will enable Wintel workstations to improve graphics delivery fourfold, according to Microsoft.

Microsoft and Intel will work on bettering migration and interoperability between NT and Unix desktop boxes and boosting the number of native NT applications in areas such as mechanical CAD and financial trading and analysis.

NationsBanc-CRT, a Chicago-based trading arm of NationsBanc Montgomery Securities, Inc., in New York, has standardized on NT for about 600 desktop machines. However, 150 traders still have Unix boxes sitting alongside their NT boxes in order to run high-end financial and stock tracking applications.

Consolidation in favor of NT is a direction Rick Shope, manager of PC technology at NationsBanc-CRT, would definitely like to go. "But I have to be able to assure those guys they won't lose access to necessary applications if they give up their Unix machines," he said, adding that the workstation application market for Unix currently far surpasses that for NT.

At the Workstation Leadership Forum held here earlier this month, Intel CEO Craig Barrett and Microsoft Chairman Bill Gates redoubled efforts to convince independent software vendors (ISV) to invest in NT.

The two announced the new Migration Assistance Program, which will help ISVs develop applications for 32-bit Intel systems running NT. The program also will help ISVs work toward the upcoming release of Intel's Merced processor. Merced is to be the first in Intel's 64-bit line and is expected to be available next year.

ISVs will get relevant product updates, discounted developer workstations, on-site consulting services and briefings on Intel's overall 64-bit architecture, and more specifically, the Merced chip.

Gates and Barrett pointed to several recent studies to convince the 300-odd ISVs present at the forum that NT would be worth their while. The studies show that low-cost Pentium-based machines preloaded with NT are gaining ground on the Unix-RISC combination, which can be three times as expensive.

For example, Framingham, Mass.-based International Data Corp. (IDC) said sales of workstations equipped with NT increased more than 70% last year. In contrast, Unix workstation sales dropped by 7%. IDC said Wintel workstations for the first time outsold their Unix-based counterparts, at 1.3 million vs. 660,000 units. ■

Get more online:

- More details from Microsoft
- An overview of a study that shows NT workstations outselling Unix boxes
- Sun's explanation of why Unix is still better

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Who's cooking the numbers?

If you were asked, "what impact, if any, would integrating browser and HTML technology into the operating system have on end users and the applications they can work with," how would you answer? Would you expect a positive impact, a negative impact or none at all?

In a recent survey conducted for Microsoft by the Telecommunications Research Group, 83% of the respondents said there would be a positive impact on end users. If you agree, please drop me a note explaining these positive effects.

Now this wasn't a survey of end users. Nor was it a survey of PC administrators or even help desk personnel. No, it was a survey of independent software vendors (ISV)! You can read most of the story at www.microsoft.com/msdn/news/isvsurvey01.htm.

htm, but keep in mind that some intriguing parts are left out.

See, first the interviewer had respondents read "a brief description of Microsoft's reasons for integrating browser technology into its Windows family of operating systems." Then they were asked a series of questions. As I envision it, the survey was like a reading comprehension test. The document says something like "Integrating browser technology into the operating system will have a positive impact on end users because . . ." Later, when a question is asked, respondents recall the words from the document rather than deciding on their own.

I've gone into all this just to remind you that any survey results collected on behalf of a vendor are almost hopelessly flawed or skewed and, as a result, are virtually worthless. For example, in the study cited above, we're not told anything about the group conducting the survey, its expe-

rience or whether it has ties to Microsoft.

Further, we're told the respondents were 200 randomly selected ISVs drawn

from a list of 4,000 companies. But information as to how those 4,000 were exactly chosen isn't provided. Could it be that they're all Microsoft certified?

It's not just Microsoft that's at fault. Most vendors in our industry commission surveys of one thing or another from time to time. Just remember to look past the pretty charts and glitzy numbers to ana-

lyze the who, what and why of the survey.

Better still, rely on your own judgment and that of people you trust to help you form opinions.

Dave Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@vquill.com.



Dave Kearns

Tip of the week

OK, I give up. Stop sending the e-mail! Tip of the week will NOT be discontinued—it will be here in Wired Windows every week, just like it always has. And you also get an additional two tips in the Fusion Focus on NT newsletter (www.nwfusion.com/focus) every week. So without further ado, here's this week's tip:

Microsoft has a new Web site devoted to issues and products of interest to you in Information Technology. Microsoft's IT Home (www.microsoft.com/ITHome) features articles and other resources about issues specific to your needs, such as total cost of ownership, Year 2000 compliance, interoperability and more. While it does have a decidedly Microsoft slant, there are quite a few gems available.



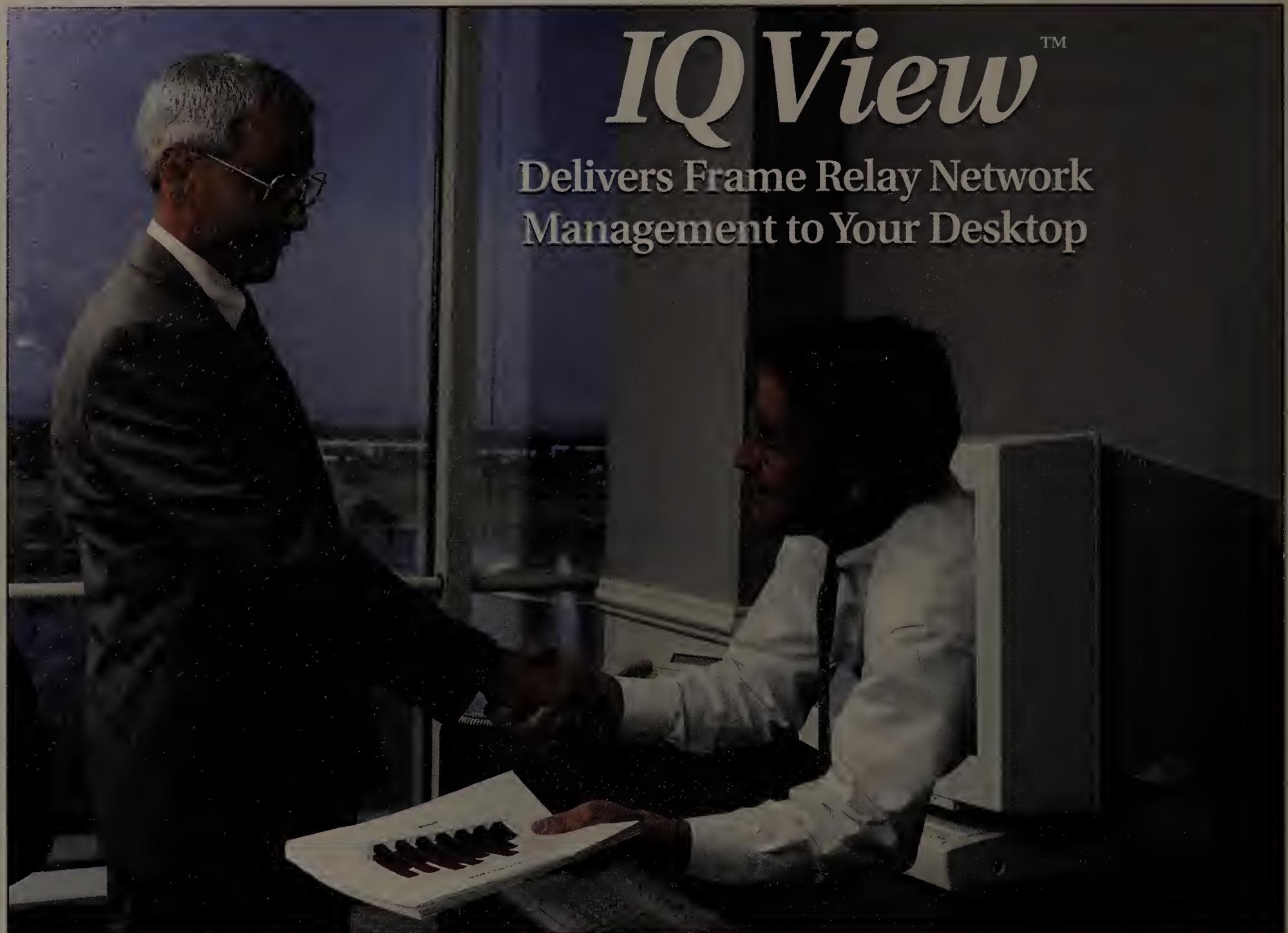
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Briefs

Cisco Systems, Inc. has unveiled a **T-1 WAN interface module** for its 1600 and 3600 routers. The WAN module features an integral T-1 DSU/CSU, which obviates the need for an external DSU/CSU. The module supports T-1 and fractional T-1 service in increments of 56K and 64K bit/sec. The module costs \$1,000 and is available now. © Cisco: (408) 526-4000



Cisco's 1600 router is getting a T-1 WAN interface module.

Sterling Commerce, Inc. recently announced new **electronic commerce software, GENTRAN: Basic 6.0** for S/390 and MVS.

The product lets users transmit electronic approvals, invoices and financial reports online. IT staff also can manage electronic commerce activity on mainframes with tracking and auditing tools, Sterling said.

Price varies depending on configuration.

© Sterling: (800) 299-4041

Compatible Systems Corp. last week said it has completed the design of two **multi-gigabit switching routers**.

The VSR product family includes two models: The VSR-2 supports two processor cards, either a 10M/100M bit/sec Ethernet LAN and a T-1 or T-3 WAN port. The VSR-8 is an eight-slot chassis that houses a dual-processor data encryption card, two-port 10M/100M bit/sec Ethernet, eight-port 10Base-T Ethernet, and a T-1 or T-3 WAN.

Both routers feature integrated class of service for guaranteed bandwidth and reliability of voice, video and virtual private network applications.

The VSR-2 costs \$15,995 and will ship in April. The VSR-8 will ship in August. Pricing has not been determined.

© Compatible: (303) 444-9532

Users find reporting tools indispensable

Data on network utilization, capacity, throughput and response time is key for holding providers to obligations.

By Jim Duffy

As users evolve from network device management to service-level management, they are relying on network reporting tools to keep IT and service providers honest.

Products and services from the leading vendors — Concord Communications Corp., DeskTalk Systems, Inc., International Network Services (INS) and Kaspia Systems — play a key role in helping users track and maintain network service levels. The ability of these products to display historical and trending information on application response time helps ensure that users are getting enough bang for the bandwidth buck.

"As we've grown [and] as we've not gotten any more finances from the state to hire more staff, have we become

Get more online:

- A look at how reporting tools sometimes don't cure management woes
- Technical overviews of the applications mentioned here



www.nwfusion.com

more dependent on [reporting]? Yes," said Joe Askins, data communications director at Arizona State University (ASU), in Tempe, Ariz. "It's the only way we've been able to survive and keep a good network running and keep growing."

ASU's data communications department has service-level agreements (SLA) with four Internet service providers. ASU uses Concord's NetworkHealth reporting tool to monitor utilization, bandwidth capacity and load balancing on OC-3, 10M bit/sec Ethernet and T-1 Internet access links, and on frame relay links to state agencies.

Conversely, NetworkHealth helps Askins' group avoid SLAs with its customers, which include ASU staffers on more than 20 Ethernet segments. "We've been able to see problems in buildings or on floors or in departments usually before they get too serious," Askins said.

Reporting tools have become more important to Pacific Bell Network Integration's (PBNI) ability to deliver SLAs, said Brian Weir, network systems consultant at PBNI. PBNI uses DeskTalk's TrendSNMP to provide performance and health reports on customer networks.

Service reports

How users are deploying reporting tools for service management:

User	Product	Use
Arizona State University	Concord NetworkHealth	Monitoring ISP service levels for Internet access; avoiding service-level agreements through proactive LAN monitoring
Pacific Bell Network Integration	DeskTalk TrendSNMP	Monitoring frame relay burst rates and quality of service
Intuit	INS EnterprisePRO	Monitoring network utilization, error conditions and frame relay committed information rates
University of Kentucky	Kaspia Network Audit	Correlating device-specific historical data with real-time CiscoWorks data to predict potential outages

With TrendSNMP, PBNI can give customers performance data on circuits and termination equipment, Weir said. On frame relay circuits specifically, PBNI now can show customers whether they are getting the burst rate they are paying for, Weir said.

"From a service-level perspective, we can give [customers] information, including the quality of the packets going through the frame switches, by measuring discard-eligible packets," Weir said. "We are giving them a clear picture that they are getting exactly 128K [bit/sec]

plus they are able to burst, and the quality of service is there."

Service-level management has not yet hit financial software developer Intuit, Inc. But the company plans to move in that direction within the next two months, said Rick Parkinson, network manager at Intuit.

When Intuit moves to service-level management, INS' EnterprisePro software and services, which the company currently uses, will play an integral part. Intuit is using EnterprisePro for monitoring and reporting network utilization, handling capac-

See Report, page 26

WaiLAN boosts DSL bandwidth

By Tim Green

San Jose, Calif.

WaiLAN Communications, Inc. has found a way to use existing digital subscriber line (DSL) technology to tie buildings in a campus together at 7M bit/sec over regular phone lines.

Dubbed WaiDSL, the technology uses the same wires that would be used for a two-way 1.5M bit/sec pipe and turns them into a two-way 7M bit/sec link. Based on rate adaptive DSL (RADSL), WaiDSL works on lines up to 2,000 feet long before performance drops off, the company claimed. RADSL runs over a regular phone line and has a top speed of 7M bit/sec in one

direction and about 1M bit/sec in the other.

To use WaiDSL, users buy a pair of WaiDSL modems and attach them to two copper phone lines. The modems come in two models, Agate 800 and Agate 850 (see graphic).

WaiDSL is designed to provide high-speed links between buildings where fiber is not available, according to Michael Sadetsky, WaiLAN's marketing manager. That was just the kind of connection Western Kentucky University, of Bowling Green, was looking for.

Most of the buildings on campus support Ethernet LANs and routers that are tied to an FDDI-based fiber ring, said David Beckley, director of networks and communications for

DSL FLAVOR OF THE MONTH

WaiLAN's WaiDSL Agate 800 and 850:



Support: 7M bit/sec in both directions

Require: Two plain copper phone lines

Connect: Campus LANs

Cost: Agate 800, \$2,499; Agate 850, \$2,799

Available: Now

the university.

One building was connected to the campus net via a T-1 link, but the building needed a faster connection. Beckley took the DSUs/CSUs off the ends of the T-1, which provided two high-quality phone lines, and put WaiDSL modems at either end. That upgraded the link to 7M bit/sec.

He tried using the same method to connect a second building, but the copper wires running to it were poor, and he could squeeze only 1.5M bit/sec out of the connection.

WaiLAN is working on new products that would enable service providers to offer WaiDSL, according to Sadetsky, who said he could not elaborate.

© WaiLAN: (408) 452-8081

XcelleNet adds remote management software

By Tim Greene

Atlanta

XcelleNet, Inc. last week introduced additions to its RemoteWare management software line that make it easier to

keep track of dial-up remote access users.

The products are designed to control the cost of maintaining a large number of remote PCs. A study by International Data Corp., a research firm in Framingham,

Mass., showed that remote clients cost almost 60% more per client to maintain than LAN-based computers. The same study also showed that the number of remote users will hit 108 million by 2002.



XcelleNet announced three new client/server software modules — Inventory Manager, Backup Manager and Anti-virus Manager — that add new functions to its flagship RemoteWare software. All of the software runs on Microsoft Corp. Windows 95 and IBM OS/2 clients and Windows NT or OS/2 servers.

Inventory Manager keeps track of the hardware and software each client has, and checks for changes, either when the remote user dials in or by prescheduled polling.

Backup Manager stores copies of designated files on a centrally located server so if files are destroyed or corrupted, they can be restored.

Anti-virus Manager scans files being sent across the dial-up link. When it detects a virus it can destroy the file, hold it or isolate it in a separate file. Anti-virus Manager is based on software from Network Associates, Inc.

The RemoteWare server gathers information from the modules when the remote users call in.

Because RemoteWare supports direct dial up or access from the Internet, Gary Malhoit, network administrator for Olympian Oil Commercial Fueling Network, Inc. (CFN), in San Francisco, expects to save a lot of money on long-distance charges. With the savings on long-distance fees and reduced hours required to administer the remote clients, Malhoit expects a payback on the cost of RemoteWare within 14 months.

XcelleNet also announced it has written hooks to link RemoteWare with TME 10 from IBM's Tivoli Systems, Inc. That makes it easier for the network manager to keep track of LAN-based and remote users from a single screen.

RemoteWare costs \$375 per client, plus \$50 to \$75 for the plug-in modules. A RemoteWare server license costs \$5,500 to \$33,000, depending on the number of clients.

©XcelleNet: (770) 804-8100

Report

Continued from page 25

ity planning and error conditions, and for comparing frame relay circuit utilization with committed information rates, Parkinson said.

The University of Kentucky is using Kaspia's Network Audit technology for device-specific reports on bandwidth and CPU utilization. "When we got into some serious service-level management contract discussion with other departments on campus, we realized that we need to be able to create and produce reports on equipment," said Doyle Friskney, director of communications and network systems at the Lexington school.

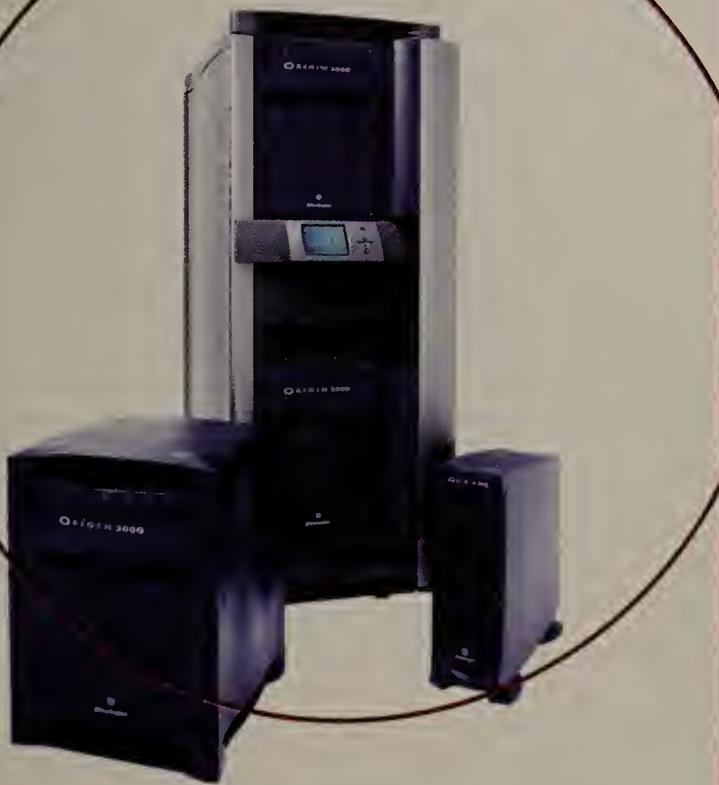
The university then correlates the reported data and trending information with data from Cisco Systems, Inc.'s CiscoWorks to predict potential problems, Friskney said. CiscoWorks monitors devices in real time, and Kaspia is useful for historical trending analysis, he said. ■



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Inside IBM's Network Division

NHD: here to stay or going away?



IBM's Networking Hardware Division has seen better days.

While NHD still brings in plenty of money — \$2 billion to \$4 billion annually, according to sources — it has lost the cache that competitors such as 3Com Corp., Cisco Systems, Inc., and Bay Networks, Inc. have in the competitive network arena.

Detractors say rather than hitting the market with new, innovative switching products or trying to anchor TCP/IP nets with some new whiz-bang hardware, NHD has rested on its laurels, content to rake in maintenance and service fees from its SNA installed base.

It also has not helped that the division has gone through multiple reorganizations and seen some of its leading executives retire or move on in the past year. Confronted with these observations, NHD did not comment.

Lackluster legacy

Still others point to IBM's legacy of lackluster third-party relationships as the root of NHD's problems. In an 18-month period during 1996 and 1997, IBM made at least eight major corporate acquisitions and partnerships. These include relationships with Xylan Corp., Ipsilon Networks, Inc. (now owned by Nokia), Cascade Communications Corp. and Sync Research, Inc.

With the exception of Xylan, which through its reseller agreement with IBM earned NHD about \$48 million last year, the relationships have not amounted to much, sources say.

Those who defend IBM say the company has tried to be leading-edge. For example, IBM took a leadership role in trying to bring ATM products to market. Its Prizma ATM chip has enjoyed some success. NHD products control most large data center operations, where some 40,000 front-end processors still handle access to the big glass houses. Some Cisco executives would give their right arms to have a quarter of that business.

So the question remains: Will IBM let NHD live off its past SNA success, cut it loose to the highest bidder or try to revitalize it?

Some say IBM should take the SNA money and run with it, possibly making it a separate unit of NHD.

Never underestimate the value of legacy hardware, says Robin Layland, principal at Hartford, Conn.-based Layland Consulting. "Overall they're not doing that bad when they've got cash cows [SNA products and services] that aren't going away anytime soon."

"There are still a lot of people running their mission-critical stuff on SNA," adds Steve Joyce, an ex-IBM employee, now vice president of marketing for Ganymede Software, Inc., a software development firm in Morrisville, N.C.

By Marc Songini

"If you look at what they've done recently, they've had some good successes," Joyce says. "The 2216 router is selling like popcorn. In other fields, like the Ethernet, IBM is not a player."

But for some, IBM is still more than a player.

"At our place we think of IBM first when we think of networking products," says Dave Hansen, IT manager of Aenor, Inc.'s mill complex, located in Thunder Bay, Ontario. Aenor is a pulp and paper manufacturer.

Hansen says he has been impressed by NHD's ser-

IBM CEO Louis Gerstner has made it no secret that he wants IBM to be a network leader, especially in the Internet arena. But sources say he has shown little tolerance for NHD's seeming lack of success.

There have been reports that IBM corporate is looking to buy a company, such as Xylan Corp. or 3Com Corp., to try to revitalize NHD. Again, IBM did not comment on these rumors.

It is also not lost on many observers that NHD's fate may be out of its own hands. Its future ultimately may be decided by bean counters in Armonk, N.Y., rather than executives in Raleigh, N.C., the division's headquarters.

However, if Gerstner's regime wanted to dump NHD, its recent move to place James Vanderslice at the helm of the division would not make sense, says Frank Dzubeck, president of the Washington, D.C.-based consultancy Communications Network Architects, Inc. Vanderslice is known inside IBM as a turnaround master who has had notable success revamping IBM's printer and storage divisions.

Moreover, Vanderslice's predecessor, Rick McGee, has moved to IBM corporate, where he can advocate for NHD.

Other changes have affected NHD as well. The division's loss of revenue also is due to the fact that in the past several years, IBM corporate has removed some big-ticket items from NHD's purview, Dzubeck points out. The Networking Software Division is a separate entity now, and product lines such as MQSeries, CICS and NetView have been moved away from NHD. So the apparent decline in revenue can be misleading, Dzubeck says.

Still, not everyone is convinced NHD's problems can be overcome.

"If the networking game is five-stud poker, and I'm IBM, then I'm at the table with a lot of chips but don't know how to play the game," says Nick Francis, a former NHD and Cisco executive and currently a principal at Madison Group, a consultancy in Cary, N.C.

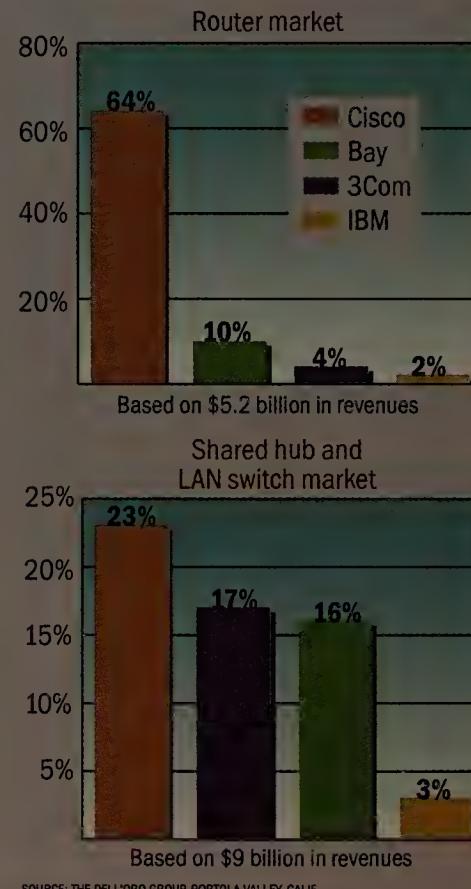
It's good to be king

"Everybody wants to be the leader," Layland says. "Does NHD have a chance now of being the leader in networking? There's not a good chance." The company should de-emphasize ATM and think of investing in a Gigabit Ethernet company instead, he says.

"What I think NHD [should] do is recognize that networking hardware is not their strong point," Francis says. "Too much has been lost for them to gain the position they had before. What they should do is embrace [electronic]-commerce and take the resources and products they have and direct them to benefit the service part of IBM. . . . NHD should change its name and become a resources arm of the services group." ■

Trailing the pack

In 1997, IBM did not compete well against the top three vendors in the router or shared hub and LAN switch market.



SOURCE: THE DELL'ORO GROUP, PORTOLA VALLEY, CALIF.

vise department, which answered questions not only about IBM products, but also about Digital Equipment Corp. products he had installed.

For the future, Hansen would like to see IBM further integrate its and other vendors' network products with the mainframe.

Lead or be lead

NHD has its work cut out for it no matter what it does.



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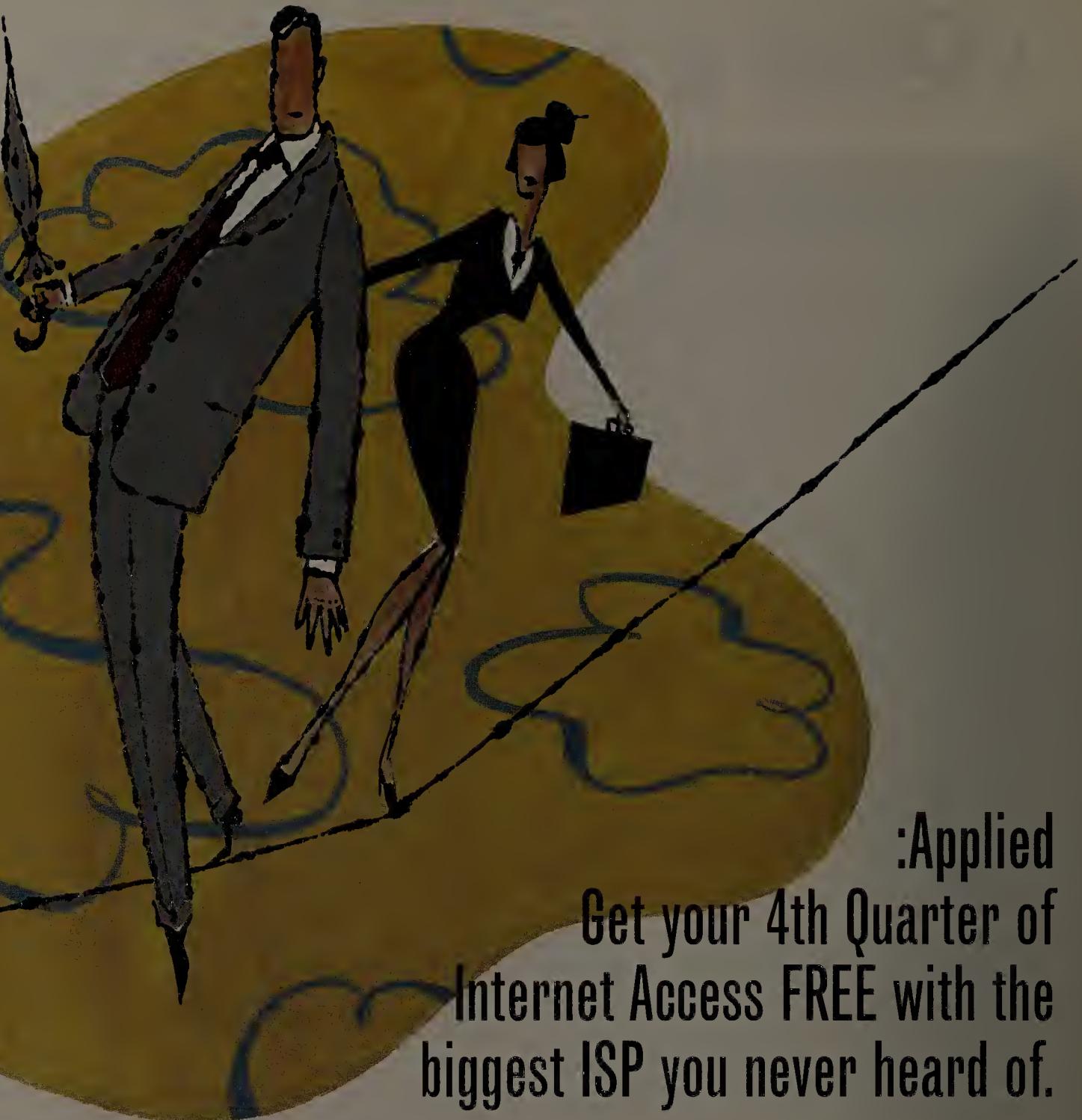
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But are we good?

Actually, we're great. If you use the Internet, you've probably used us and didn't even know it. We're the largest ISP in New York. From dial-up to high speed access of up to 155 million bits per second, we probably have the highest percentage of high speed users of any company in the world. Users who demand the best service possible.

What do we know about the Internet?

Of the 4,000-some ISP's, we are one of the handful that actually created the Internet. Hey, we put Kodak, Corning, and the U.S. Department of Labor on the Internet, we put in the super computer center at Cornell, we plugged in Rockefeller University, Memorial Sloan Kettering, the Cornell Medical Center, and many, many more. And now, we're also helping to invent Internet 2, so stay tuned.

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Briefs

The number of frame relay ports in service will continue to boom, with an expected increase from 269,591 in 1997 to 485,823 in 1998, according to preliminary results from the Distributed Networking consultancy. A survey by Distributed Networking said the number of companies using frame relay also will increase over the same period from 25,559 to 39,575. The survey polled 19 frame relay carriers representing a roughly equal mix of local, long-haul and international carriers.

More results can be found online at www.webtutorials.com.

Five hotels are in the process of testing IPORT, a high-speed Internet access service backed by Microsoft Corp., Atcon/Info, Inc. and CGX Communications, Inc. The IPORT trial service, announced earlier this month, will let business travelers access their e-mail, corporate networks and the Internet from a hotel or meeting room using a preconfigured laptop. The system is based on Microsoft's BackOffice software and CGX's dedicated Internet access services. IPORT is expected to be available by midyear, but pricing is not yet available.

Web hosting service providers Hiway Technologies, Inc. and Best Internet Communications, Inc. last week announced their plans to merge. Both companies offer Web hosting services based on Unix platform servers to more than 80,000 customers combined.

Gemini Submarine Cable System, Ltd., a joint venture between WorldCom, Inc. and U.K.-based Cable & Wireless, Ltd., opened for business earlier this month. The system carries 60G bit/sec of traffic. Officials said the capacity would help foreign users access U.S.-based intranets and corporate trading partners.

Where have all the area code numbers gone?

New report argues area code splits are unnecessary if carriers quit wasting numbers.

By David Rohde

Washington, D.C.

Quick: Name the reason why we keep running out of telephone numbers and have to create new weird-looking area codes.

If you answered "because of the growth of modems, faxes, cell phones and data lines," you're wrong. But don't worry: That's what almost everyone else thinks, too.

A new report indicates that carrier mismanagement of numbers, not voracious user appetite for new voice and data lines, is to blame for repeated area code splits.

In the report "Where Have All the Numbers Gone?" author Lee Selwyn, president of the Boston research firm Economics and Technology, Inc., argues

that the telephone industry is wasting hundreds of millions of unused numbers because of old-fashioned policies that slice local calling areas into distinct geographical exchanges.

Selwyn said the 195 area

International Communications Association user groups commissioned Selwyn's report. Both groups called on local carriers and the Federal Communications Commission to revisit their numbering policies.

AREA CODE EXPLOSION

Most new U.S. area codes have gone into effect in just the past three years:

*Includes area codes currently being phased in

SOURCE: ECONOMICS AND TECHNOLOGY, BOSTON



codes now assigned in the U.S. provide a capacity of more than 1.5 billion numbers — many more than the country needs.

The Ad Hoc Telecommunications Users Committee and the

"The usual reason given, the reason that most of us tend to accept for the proliferation of area codes, is that we are all to blame," said James Blaszak, counsel to the Ad Hoc committee.

tee. "But now there are five telephone numbers available for every person in the U.S."

One big problem, Selwyn said, is that local carriers continue to assign an exchange, a block of 10,000 numbers defined by an area code and the following three digits, to each local "rating area." A rating area is a small community used to fix a geographic location in order to calculate precise distances between any two points.

Each time a competitive local exchange carrier (CLEC) enters a market, it must apply for its own exchanges in each rating area, even if it installs only one high-capacity switch to serve an entire metropolitan area, Selwyn said. As a result, a CLEC may take up 10,000 numbers in one part of a metro area but only have customers for 500 of them.

Selwyn suggested four potential solutions:

- Local carriers should implement "number pooling," in which exchanges are broken into blocks of 100 and 1,000 for assignment to different carriers.

- Local carriers should consolidate rating areas. Those that charge local tolls by the mile should consider revising their tariffs to make up the revenue elsewhere.

- The FCC should drop a 1995 policy prohibiting the use of special area codes for mobile wireless services.

- Carriers should conduct rigorous number utilization audits and levy penalties for number hoarding. ■

WorldCom sorts out its Internet assets

By Denise Pappalardo

Looking to get all of its Internet service ducks in a row, WorldCom, Inc. recently revealed a

WorldCom's Internet mixing bowl

WorldCom is dividing its ANS Communications, CompuServe Network Services (CNS), UUNET Technologies, GridNet International and Internet services into two divisions:

Value-added services

Lead management: Peter VanCamp, president of CNS

Service offerings:

ANS' Virtual Private Data Networking
CNS' Intranet Security Frame-Net Firewall
Grid VPN/Intranet Service
UUNET's ExtraLink

Basic Internet services

Lead management: Mark Spagnolo, president and COO of UUNET

Service offerings:

ANS' Internet Connection Services
CNS' Dedicated and Dial-up Internet Access
GridNet X.25
UUNET's Wholesale Services

plan to reorganize its four Internet subsidiaries into two business groups.

Reorganizing the subsidiaries is the first of two steps being taken by WorldCom to integrate its recently acquired CompuServe Network Services (CNS) and ANS Communications businesses with its UUNET Technologies, Inc. and GridNet International companies. WorldCom's next step will be to integrate its subsidiaries' physical networks.

The reorganization's goal is to gather similar services under one management team, according to John Sidgmore, UUNET's CEO and WorldCom's chief operating officer (COO). WorldCom may have three or four versions of certain offerings under the plan, but the company has no immediate plans to eliminate redundant services. ■

One new business unit will include basic Internet services while the other will include value-added net services.

Mark Spagnolo, UUNET's president and COO, will lead the basic Internet services group.

"This group will concentrate on UUNET's traditional services coupled with telephony services," Sidgmore said. IP fax and voice services will also be included in the basic Internet services group.

The value-added services group will be run by CNS President Peter VanCamp.

Most of CompuServe's and GridNet's services will fall into the value-added division, while UUNET's and ANS Communications' service offerings will be divided between the two groups.

WorldCom doesn't expect to start integrating its Internet subsidiaries' disparate physical networks until year-end. The company faces numerous challenges, including finding net equipment that can scale up far enough to support massive traffic, and blending four networks based on different net gear. ■

Get more online:

- A look at how Texas is trying to slow the demand for new area codes
- An overview of a number-pooling plan in Illinois
- A case study about how Massachusetts chose geography-based area codes instead of overlays



PSINet becoming one-stop shop for 'Net, data and voice services

By Denise Pappalardo

Herndon, Va.

Can PSINet, Inc. have its cake and eat it, too?

After establishing its telecommunica-

tions division last month, PSINet started putting pieces in place that will let the Internet service provider buy network capacity from local exchange carriers and sell data services overseas.

That means PSINet's fiber assets will enable the ISP to offer users a single dedicated connection for Internet access, frame relay and voice calls. Today, only two providers, WorldCom, Inc. and Tele-

port Communications Group, Inc., offer such a service nationwide, through their ISP subsidiaries.

While other ISPs can offer similar services to business users, PSINet's approach differs from most, if not all, of its traditional competitors. UUNET Technologies, Inc., GTE Internetworking and TCG CerfNet offer integrated Internet access, data and voice services, but none could do so until they were purchased by a telecommunications service provider.

PSINet Telecom, PSINet's wholly owned subsidiary, is a regulated business that will require federal, state and even European approval to offer certain services.

For example, PSINet Telecom has the ability to go to each state public utility commission to be granted competitive local exchange carrier (CLEC) status, said Eric Paulak, an analyst at the Gartner Group, Inc., a Stamford, Conn.-based consulting firm.

Saving money

CLEC status will let PSINet buy capacity from incumbent LECs and offer business users a local and long-distance service package that will save them money, Paulak said. PSINet Telecom will be able to get T-1 local-loop access for a lower price than any unregulated ISP.

"This is not PSINet trying to become a phone company, but it's PSINet trying to offer customers local, long-distance and international services without dragging its unregulated business into the mess," Paulak said.

PSINet also confirmed that it is buying capacity on a trans-Atlantic cable that will carry what regulators consider "basic data service" from the U.S. to Europe and the U.K.

The Federal Communications Commission last month granted PSINet a 214 license, which lets the ISP offer data services overseas, said Pete Wills, chief operating officer at PSINet.

Although a 214 license isn't necessary to offer Internet access services, a license is needed to resell common carriers' voice or data services, which is exactly what PSINet can do through its agreement with IXC Communications (NW, Feb. 9, page 6).

PSINet recently finalized a deal with IXC that essentially gives the ISP 10,000 route fiber miles of IXC's OC-48 network and IXC a 20% stake in PSINet. The agreement also stipulates that each provider can resell the other's service offerings.

While PSINet will be "in the near future revealing strategies, plans and products [regarding] voice over the Internet, we don't plan on being in the same business as the telephone companies. We are an Internet company," Wills said. ■

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Now that the industry's leading networking providers have announced they will ship High Speed Token Ring products later this year, users need to make plans for the implementation of this turbo charged upgrade to their existing Token Ring nets. Large frame sizes, native prioritization, and multiple active paths between switches are among the key attributes that Token Ring brings to the table. Token Ring users can now plan to scale their networks up to 100 Mbit/s and Gigabit speeds without sacrificing these attributes.

Join industry gurus Kevin Tolly, president of The Tolly Group and John Gallant, Editor in Chief of *Network World* in a unique interactive event that will examine High Speed Token Ring and the issues surrounding this exciting new LAN technology. Plan now to attend this **FREE SEMINAR** and learn how High Speed Token Ring can boost your network bandwidth.

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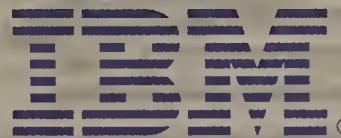
Learn how High Speed Token Ring and ATM compliment each other in the Enterprise.

Learn how unique architectural characteristics of Token Ring provide tangible benefits when scaling to gigabit speeds.

SEMINAR AGENDA...

- 8:00 - 9:00 Registration & Continental Breakfast
- 9:00 - 9:30 **SEGMENT 1 • Level Set**
- 9:30 - 10:30 **SEGMENT 2 • The Decision Drivers**
- 10:30 - 11:00 Break & Product Information
- 11:00 - 12:15 **SEGMENT 3 • High Speed Token Ring Strategies**
- 12:15 - 1:30 Complimentary Lunch
- 1:30 - 3:00 **SEGMENT 4 • Technical Issues and Options**
- 3:00 - 3:15 Break & Product Information
- 3:15 - 4:00 **SEGMENT 5 • The Future**

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KEVIN TOLLY is President and CEO of The Tolly Group, a strategic consulting, independent testing, and industry analysis organization. He is a leading industry consultant and is responsible for guiding the technology decisions of major vendor and end-user organizations. Tolly writes regularly for *Network World*, and other publications and has been widely quoted in leading business publications such as *Business Week*.



and John Gallant

NetworkWorld

JOHN GALLANT is Editor in Chief of *Network World*, one of the fastest growing publications in the computer/communications industry. With more than 13 years experience covering the industry, Gallant sets the strategic directions for the newsweekly, which serves over 157,000 network IS managers. As senior vice president, Gallant also guides Network World Publishing, Inc's (NWPI) other editorial ventures including *IntraNet*, a magazine focusing on how corporations are using Internet technologies.

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APRIL 23, 1998 Washington, DC Georgetown University Conference Center

Carriers missed the boat on wireless fire sale

A few weeks ago, the federal government started auctioning off Local Multipoint Distribution System (LMDS) wireless licenses. Some thought the auc-

tion would create a gold rush for the modern era. They were wrong.

LMDS uses microwave signals to support integrated voice, video and data

transmissions. It should reduce signal interference and fading, which, combined with its capacity advantage, should enable support for high-quality, high-

speed interactive services and multimedia applications.

Overall, LMDS sounds like good news. After all, digital subscriber line technology isn't being deployed as rapidly as many would like.

The availability of high-speed Internet connectivity from cable providers is still spotty. Everyone agrees that a capacity constraint is keeping low-cost, leading-edge graphical and interactive applications from being deployed in home and remote offices.

So why did all of the major interexchange carriers (IXC) take a pass on bidding for LMDS licenses? The Federal Communications Commission accepted 138 qualified bidders for 986 LMDS licenses in 493 service regions, and not one of the major IXC's put in a bid.

How could that be? Isn't this a possible solution to all the bellyaching going on about how the RBOCs aren't opening up their nets quickly enough?

Wouldn't LMDS provide a diverse path into homes and businesses and open high-availability network services? Couldn't LMDS solve the bandwidth and bottleneck problems users face today in the local infrastructure?

We would have thought at least some long-distance providers would put a stake in the ground and start prospecting for gold.

A measly few million could buy licenses in most of the top-tier U.S. cities. The big carriers annually pay more than that to the RBOCs for termination fees.

Some of the registered bidders included Bell Video Services, US WEST Communications, WinStar Communications and Nextband Communications.

A company called Cortelyou Communications outbid WNP Communications in four of the top eight markets. WNP is the venture capital consortium that deposited the highest upfront payment, dominated the first round and was not challenged in the second round for licenses in Chicago, Detroit, Dallas and Boston. A lot of the unchallenged bids were for \$5 million.

The primary implication of this disappointing showing is that it will probably take a lot longer for LMDS to be used as an access service into current and emerging WAN services. Also, it will probably take longer for businesses to derive benefit from LMDS-based local services.

Briere is president and Heckart is vice president of TeleChoice, Inc., a consultancy in Verona, N.J. They can be reached at dbriere@telechoice.com and checkart@telechoice.com.

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Presented by
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As a network IS professional, your end-users are continuously finding new ways to leverage your network for business advantage. The resultant traffic load is rapidly pushing LAN and WAN backbones to the breaking point. At the same time you are struggling to support the high QoS demanded by new applications such as web browsing, desktop conferencing and collaborative groupware.

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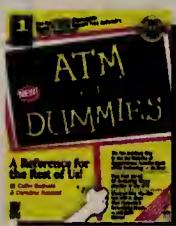
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Intranet Applications

Covering: Messaging • Groupware • Databases
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Briefs

■ Document management vendor PC DOCS Group International, Inc., of Toronto, has completed its acquisition of Fulcrum Technologies, Inc., a search engine/knowledge management company based in Ottawa. Fulcrum stockholders received one PC DOCS share for every 4.4 shares of Fulcrum that they owned. Fulcrum will continue to operate under its own name.



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■ Security Dynamics, Inc. has launched The SecurID Protected Program. Bay Networks, Inc. and Aventail Corp, the first vendors to participate in the program, will bundle Security Dynamics Ace/Server and authentication tokens with their respective security products.

■ Business application outfit Astound, Inc. this week will release a new version of its Web-based multimedia presentation software. Designed to allow users to create presentations and deliver them over the World Wide Web, Astound 5.0 includes several new features such as 3-D effects for headlines, more precise control of animation timing and the ability to import PowerPoint 97 files. Astound 5.0 runs on Windows 95 and Windows NT 4.0 or later. It is available starting Wednesday for \$249.

© Astound: (408) 720-0337

■ NCR Corp. and Microsoft Corp. last week announced they would tightly integrate NCR's Teradata datamining product with Microsoft's SQL Server. The two companies also promised to make NCR's Teradata relational database software available on the Windows NT Server by mid-1998.

Sendmail: from freeware to feeware

The widely used e-mail product will add support, service and new features for a price.

By Andy Eddy
Emeryville, Calif.

Freeware is thriving these days. Apache Server and Linux operating system remain extremely popular, and Netscape Communications Corp. is readying a release of its Communicator source code to the public.

But one of the freeware stalwarts is moving in the opposite direction. The creators of Sendmail have formed a new company that will pitch a commercial version of the popular e-mail system.

This week, Sendmail, Inc. will publicly unveil the latest beta of the free Sendmail program, but it will also discuss plans to commercialize what has been a staple of the freeware community for the past 17 years.

Company officials noted that Sendmail currently is being used in a number of systems, from such notable outfits as online service America Online, Inc. and Internet service providers EarthLink Network, Inc. and UUNET Technologies, Inc.

Sendmail has become a bit of

a de facto standard courtesy of the extensive enhancements added over time by the Internet community. On the surface, this commercialization might seem to be a greedy grab, taking what has been a popular program and turning it into a proprietary property. However, Greg Olson, president and CEO of Sendmail, said the offshoot of the process also will create a better freeware product.

"We feel strongly about the freeware program. We're working with the community to sort

out how innovation can be driven on freeware, yet [users can] still implement new features into the commercial version," Olson said.

The commercial side of the equation still is a concern to some. Phil Schacter, a senior analyst for The Burton Group, an information technology advisory firm based in Midvale, Utah, expressed mixed feelings about

SENDMAIL'S STORY

- Sendmail was first developed by Eric Allman in 1981
- It currently has a 75% to 80% market share, with over one million copies in use
- A freeware version is coordinated through www.sendmail.org

Sun faces Java backlash

By Chris Nerney
San Jose, Calif.

In the drama that is the legal battle between Sun Microsystems, Inc. and Microsoft Corp. over Java licensing issues, Microsoft clearly is cast as the villain.

But some warn that a victory for Sun isn't necessarily good for Java. "If Sun wins, it may be a net loss for Java development overall," said Ron Rappaport, an analyst for Zona Research, Inc., in Redwood City, Calif.

Sun claimed in a lawsuit filed last October that Microsoft's Internet Explorer 4.0 browser failed its Java compatibility tests, thus violating the Java trademark and licensing agreements that all Java licensees are required to sign.

The first courtroom skirmish came Feb. 27, when a U.S. District Court here heard a request from Sun that would force Microsoft to remove the "Java compatible" logo from Internet Explorer 4.0. No ruling has been made.

If Microsoft prevails in court, many developers fear it will continue to develop its own brand of Java, destroying the write-once, run-anywhere promise of the programming language introduced by Sun three years ago.



IBM's Gee is confident in Sun's approach.

Indeed, Microsoft last week announced a revised version of its Java tools for Windows-based computers that goes far beyond the changes it made to Java in Internet Explorer 4.0.

Rappaport, however, said a legal triumph by Sun over Microsoft could inhibit development efforts by other Java licensees.

"A company like IBM that wants to improve Java's performance on IBM architectures won't be able to touch it if some legal precedent is set," he said.

One Novell executive recently expressed similar concerns. "You know, I have NetWare to worry about, and I have issues with NetWare I have to tweak and turn, so I can't have Sun telling me, 'No, you can't do that,'" said Chris Stone, Novell vice president of strategy and corporate partnerships.

Stone said many other Java licensees already are tinkering with their own Java Virtual Machines needed to run Java applications.

"Everybody is playing with it. It's slow," he said.

So does this mean other Java licensees experimenting under Java's hood are tempting a court date with Sun?

Not at all, Sun said. "We encourage all of our licensees to make improvements on top of the Java platform," said a spokesperson for Sun's JavaSoft division. "There is a well-defined infrastructure in place for doing so."

What licensees can't do is "unilaterally make changes within the Java API and deliver them into the marketplace as Microsoft has done," the spokesperson said.

A spokesman for the largest Java licensee said he had no concerns about being hamstrung by Sun. "Provided we are compatible in terms of meeting the requirements and specifications of the compatibility tests, how we implement in terms of performance is entirely our responsibility," said David Gee, program director for IBM's alphaWorks Web site.

There's another reason IBM needn't worry about flunking Java compatibility tests.

"We helped write most of the tests," Gee said. ■

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Get more online:

- An overview of Sun's efforts to have Java made an international standard
- Microsoft's view on Java portability



Sendmail. Schacter argues that the company might have a hard time becoming a "major force in the marketplace," yet believes that it still has a good chance at rounding up companies and ISPs to jump on its bandwagon.

"[Customers are] buying a support organization and enhancements that'll better cater to what they're trying to do. ISPs in particular have special needs, and I think they would be happy to pay for the enhancements and support," Schacter said.

The latest freeware version, labeled as v8.9, is being billed as the "spam control release" and should be ready for full release in early April. This will be followed by the first retail product, Sendmail Pro, which is targeted for an August-September rollout. Pricing hasn't yet been finalized, but Olson noted the cost would be competitive, in the range of \$1,000 per server.

The Pro version adds graphical Web-based tools, binary installations for leading platforms, support and service, and better spam management, the company said.

Sendmail's future strategy includes a move toward the corporate user with a server product planned for a second-quarter 1999 release, as well as a new version of the freeware in the first quarter of 2000 and an enterprise product in the fourth quarter of 2000.

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Minutes as a measure

The Internet is like a packet-oriented device. To the Internet, all data and all data is divided into packets. Individual streams of data, known as ses-

sions, between, for example, a Web server and a browser are broken up into packets. Each packet contains an IP source and an IP destination address and is processed

individually by the routers it traverses. In the Internet, the data packets that make up a single session do not need to take the same path across the 'Net. They are not guaranteed to get to the destination in the same order as they were sent. They may be duplicated. They may even be lost and will have to be retransmitted.

Within sessions, data packets are only

sent when they need to be. For example, if you are using an application that provides for telephone-like connections over the Internet and you are not talking (for example, pondering the importance of the last thing that the person on the other end said), your application is not sending any data, therefore no packets get sent. Well, if you cogitate too long, a keep-alive packet may be sent to keep the session alive, but these are few and far between.

In addition, when you are connected to the Internet, you may have multiple applications running simultaneously. The Internet protocols were designed to multiplex many concurrent sessions, not to just run one at a time. The individual packets have tags to indicate which session they are part of.

The time factor

There is nothing in the 'Net that lends itself to a time-based accounting of Internet data transfer. There may be a time-based access fee, but since a specific connection potentially encompasses many parallel applications, this cannot be translated into a per-minute usage fee for a particular Web server.

Billing based on the amount of data transferred may make sense, but billing based on the amount of time that you spend reading some page you downloaded does not have any technical or resource usage justification.

So why is it that most stories about Internet telephony talk about billing in terms of minutes? Sure it is a familiar concept in the telephony world because many telephone calls for fax or voice are billed per minute. For example, there is projected to be over 400 billion minutes of phone usage in the U.S. in 1998. But this does not translate to use of applications over the Internet. In some cases it might be nice to have time-based billing — after all, the equivalent of a page of fax can be transmitted from my machine at home in a small fraction of a second over my cable-TV based Internet link.

Use-based rather than usage-based pricing would also mean that sending some packets would cost more than others, a somewhat strange concept, also easy to defeat by changing the use tag between consenting end systems. But overall it seems a bit quaint to use yesterday's billing concepts for tomorrow's technology. The use of such concepts might even be a way to tell if the pundits understand the technology.

Disclaimer: Harvard is re-engineering its core systems to avoid the pejorative use of the description "quaint," but the above are my thoughts alone.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.

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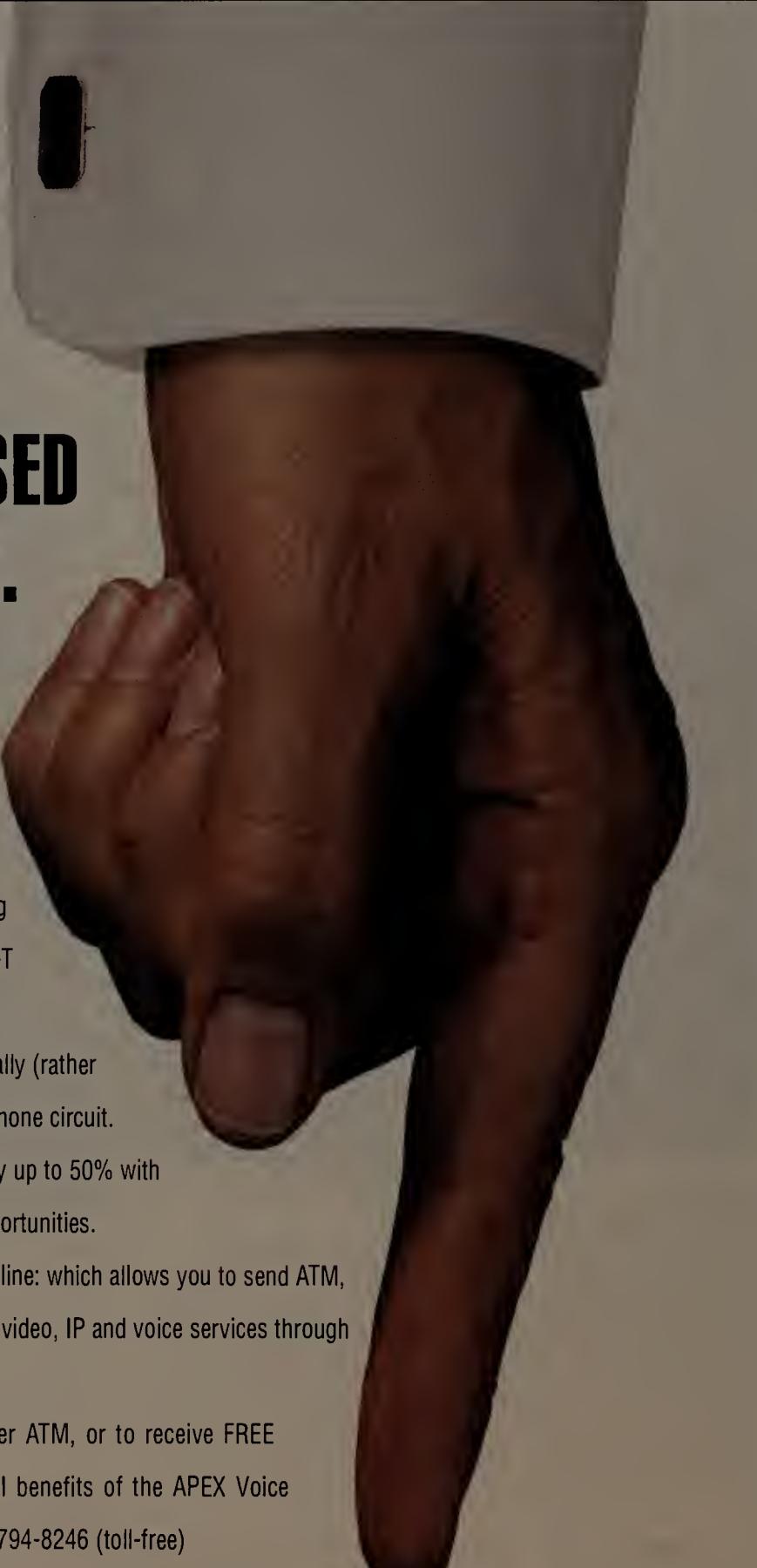
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Scott Bradner

Technology Update

Covering: Evolving Technologies and Standards

UTTER'S NETWORK HELP DESK

Ron Nutter, a Master Certified Novell Engineer and Groupware CNE in the Lexington, Ky., area, tracks down the answers to your questions. Call (800) 622-1108, Ext. 476, or send your questions to rnutter@world.std.com.

I've heard that NetWare 4.11 can handle long file names. Is this true and, if so, how do you facilitate this?

Via nwfusion

Long file names are handled by loading name space support modules.

For Macintoshes, you'll need to use MAC.NAM. For computers running Unix, you'll need to use NFS.NAM. All other computers should be supported by LONG.NAM.

If you need LONG.NAM and MAC.NAM, you should consult Novell, Inc.'s Technical Information Document No. 1007579. This document details what you need to be aware of when using these two name spaces on the same volume.

The process for adding name space support to a volume begins by typing "Load LONG.NAM"—or the name of the name space module you're using—at the command prompt. Then type "Add Name Space Long To volume—name." Before restarting the server or adding name space support, make sure you have the appropriate .NAM module present in the DOS partition directory from which you run server.exe.

It is a good idea to check the support.novell.com Web site periodically for updates to the name space modules. Being aware of updates may help you circumvent problems.

While considering whether you're going to support long file names, you should look at the potential of adding memory in the server to handle the enlarged FAT and DET tables. Again, refer to Novell's documentation for more information on this.

Also be on the lookout for the release of Novell Storage Services (NSS) later this year. NSS will change NetWare from a cached to a journalized file system, which will allow large file systems to be supported on less memory and will speed the volume mounting process considerably. This system is similar to the one IBM uses in its AS/400 midrange systems.

Lastly make sure you have the latest hard-disk controller drivers installed on the server.

Crafting the directory-enabled network

By Donal Byrne
and Cüneyt Özveren

Tomorrow's business-critical applications are being designed to make extensive use of Web-based and object-oriented technologies.

Many application and network operating system vendors are planning to use a directory service to manage this new generation of network-focused applications.

However, there is one missing ingredient in the overall recipe for directory nirvana. The network infrastructure has never been integrated with directory services. Switches and routers traditionally have been excluded from directories. Additionally, routers and switches have not been able to enforce the policies specified in a directory.

With the increased awareness and dependence of next-generation applications on the network, it is imperative that the network infrastructure in turn become more application-aware. Tying the network infrastructure into the directory service is a major step in the right direction for the creation of such networks.

Today, there are a variety of directory service offerings from which to choose. Novell Directory Services (NDS) is widely recognized as the most mature enterprise-wide directory. Netscape Communications Corp.'s Directory Server is based on the latest version of the IETF's directory access standard, called Lightweight Directory Access Protocol (LDAP) Version 3. It is important to note that LDAP itself is not a directory service. It is a protocol standard that defines access and replication methods for directory services.

Microsoft also is promising Active Directory, an enterprise-class directory service, in its upcoming release of Windows NT 5.0. It also is rooted in the LDAPv3 standard.

While many factors enter into your choice of enterprise-wide directory service, the suitability of a directory service for the directory-enabled network

depends on the following key factors. It should be LDAPv3-compliant. It also needs to support a blueprint that defines the set of objects, also known as classes, that can be created in a directory.

Each object has a set of attributes used to describe its characteristics. For example, a network switch could be represented by an object. The object could be of a type known as a container.

A container object includes more objects underneath it. For example, the switch object could

be retrieved by network elements such as switches and routers.

Today's switches and routers only support SNMP and have no mechanism for accessing a directory service. A proxy device, called a policy server, is used to handle this situation. The policy server is capable of accessing a directory service through LDAP and then can communicate with the switches and routers through SNMP. Unfortunately, this mechanism adds components to the network and has some scaling limitations due to the central-

and maximizes scalability.

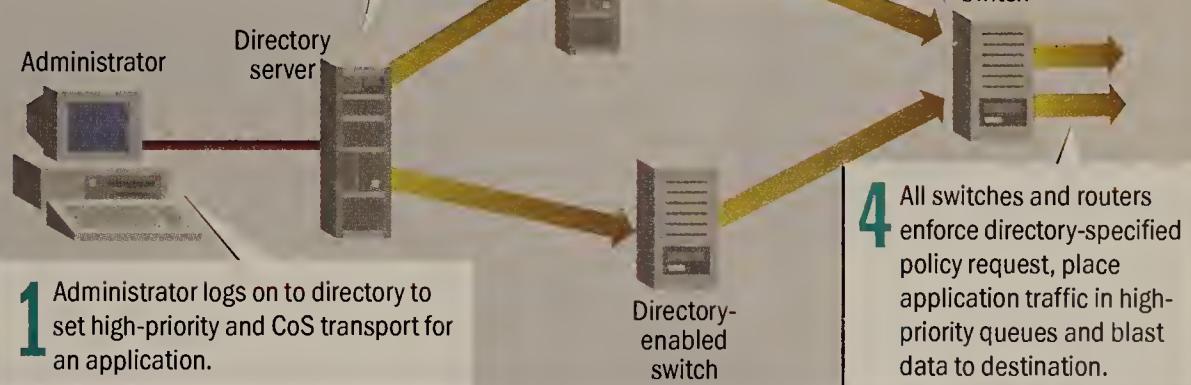
Network device definitions can be vendor-defined or defined by standards bodies or industry initiatives. The Desktop Management Task Force, a standards body, is working on Common Information Model (CIM), which provides a broad definition for management of the overall computing environment.

The Directory Enabled Networks ad hoc Working Group is a separate but complementary industrywide initiative started by Microsoft Corp. and Cisco Sys-

HOW IT WORKS

Directory-enabled networks

The central ideas behind directory-enabled networks are to simplify overall IT administration and to speed delivery of applications over the network. These goals are achieved through the directory specified and enforced use of application and user CoS policies.



have additional objects representing line-cards in the switch. The line-card object may contain link speed as an attribute.

In addition to objects representing physical entities, more complex objects can be created to represent policies and configuration settings. An information model is used to describe how these objects interact, and the model defines the relationships between objects.

The final but crucial piece of the puzzle for directory-enabled networks is the practical aspect of how the data within the directory is actually populated and

retrieved by network elements such as switches and routers.

Next-generation switches and routers will support directory service access without the need for intermediate policy servers. This can be achieved through the integration of an LDAP client into the switch or router.

The most advanced directory-enabled switches are capable of participating as a peer entity within the directory service.

That means the switch can participate in the native directory replication process to automatically receive any relevant directory updates. Such an approach minimizes complexity

systems, Inc. The group now has active participation from over 100 companies. The initiative is focused on specifying a design for the network infrastructure that is compatible with CIM.

The DEN Specification is expected to eventually become part of the overall CIM standard.

Byrne is vice president of marketing and Özveren is vice president of engineering at Berkeley Networks, Inc. Berkeley Networks is a start-up company in Milpitas, Calif., that delivers advanced directory-enabled networking products. They can be reached at (408) 719-3004.



EDITORIAL *insights*

Network World honored for journalistic excellence

Last week, *Network World* took home one of the most prized awards in business journalism — a Jesse H. Neal Editorial Achievement Award from the American Business Press (ABP) association.

We received the award for the best single issue of a newspaper for our 1996/97 Power Issue, our annual look at the most powerful people and companies in the network industry. That entry also was a runner-up for the Grand Neal Award, which recognizes the best of the more than 1,000 editorial entries assessed by the Neal Award judges.

Those awards are the latest in a string of honors for the editorial staff of *Network World*. Last year, we earned two Certificates of Merit from ABP, one for our series "The Internet Health Report," and another for our 10-Year Anniversary Issue.

We also were cited by our peers in the Computer Press Association as a runner-up in the annual CPA awards' Best Newsweekly category. Mark Gibbs was honored by CPA for his "IntraVert" column in our monthly *IntraNet* supplement. In 1996, we also received *Folio* magazine's prestigious Editorial Excellence Award. In the past year, our design team has received awards for its work from *Folio* and the



American Society of Business Press Editors. And our own Adam Gaffin, who runs Network World Fusion (www.nwfusion.com), was cited as one of the 10 top journalists in electronic publishing by *Marketing Computers* magazine.

While these awards are great for the ego, they are more important because they illustrate how *Network World* is fulfilling its mission of service to network professionals. That mission is simple: to help you do your job and advance your career by providing the best news, analysis, reviews, opinions and design.

Behind that simple goal, however, is a great deal of hard work by reporters, columnists, freelancers, reviewers, editors and people who toil in the background to make the rest of us look good — like our copy editors, designers and administrative staff.

We hear a lot of vendors talking about one-stop shopping and trying to be all things to all customers. That doesn't work for us. We have a single-minded focus on the needs of network professionals. We're the only newsweekly written exclusively for you. And that's a great job, awards or not.

John Gallant, editor in chief

jgallant@nww.com

Totally Unplugged • Ira Brodsky

CDMA proves the power of an open standards process

How quickly things change. Little more than a year ago, critics charged Qualcomm's Code Division Multiple Access (CDMA) wireless technology had won widespread support on the strength of its inventors' exaggerated claims. Some even accused Qualcomm of fraud.

Today, CDMA is delivering virtually everything it promised. Compared with competing wireless technologies, CDMA is demonstrating qualitatively better capacity, coverage and audio quality, not to mention longer battery life. In fact, CDMA is off to the fastest start of any cellular radio technology, amassing eight million users in just two years of commercial service. CDMA clearly will play a key role in growing the wireless communications market.

But you don't have to take my word for it. Nearly every major wireless equipment manufacturer has embraced some form of CDMA as its next-generation solution. CDMA has even out-muscled the market leader, Europe's global system for mobile communications (GSM), in the U.S. and Japan, the world's top two mobile phone markets.

CDMA is to wireless today what the integrated circuit was to computers 20 years ago. Like most paradigm shifts, CDMA requires us to throw traditional thinking out the window, which is why it sometimes evokes emotionally charged responses from opponents. Conventional digital wireless technologies support multiple conversations (or data sessions) by assigning them to different frequencies and time slots. In contrast, CDMA puts multiple conversations on the same frequency at the same time and uses mathematical codes to prevent them from interfering with one another.

CDMA vendors are focusing on four major applications: mobile telephone, wireless local loop, mobile satellite and wireless data. Nationwide CDMA mobile phone networks are being built in the U.S., Korea, Japan, China, Peru, Israel and other countries. CDMA wireless local-loop networks are providing basic services to telecom-starved consumers in countries such as Russia, India, Nigeria, the Philippines, Guatemala and Indonesia.

The deployment this year of the Globalstar satellite network will create a global footprint, catapulting CDMA ahead of GSM in

coverage. And CDMA shows great promise for high-speed wireless data applications, which is why even Swedish radio giant Ericsson, a long-time Qualcomm adversary, is developing its own wide-band CDMA.

But there's more at stake here than simply whether mathematical codes prevail over time slots. This really is a conflict between two opposing technology development models. The outcome could have a profound impact on all high-tech industries.

The competition between CDMA and GSM represents a larger battle between voluntary industry standards and government-mandated standards. CDMA was proposed by a small company at a time when the U.S. cellular telephone industry had already endorsed another digital technology — Time Division Multiple Access. It was up to CDMA entrepreneurs to convince operators that their solution was worth waiting for. To its credit, the Federal Communications Commission remained neutral, leaving the final decision to network operators.

In contrast, GSM was developed by a government/industry committee of experts. Its goal was to come up with a single standard and mandate its use throughout Europe.

Although committees tend to weed out innovation in favor of entrenched vendors, the European community believes that's a price worth paying because customers simply aren't qualified to make tough technology choices on their own.

The Europeans are mistaken. CDMA, a product of inspiration, will beat the pants off GSM, a product of back-room politics.

Brodsky is president of Datacomm Research Co., a Chesterfield, Mo.-based consulting firm. He can be reached at ibrodsky@ix.netcom.com

MESSAGE

Send letters to nwnews@nww.com or John Gallant, editor in chief, Network World, 161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.

Thoughts on Antisoft

Regarding Mark Gibbs' column "How we invented Antisoft and found happiness" (Feb. 23, page 62):

I agree that Linux has the momentum and support necessary to convince people that life without Microsoft is possible. Unix and the Internet go together infinitely better than Windows and the Internet. Today, all you really need is a good Web browser and a stable computer.

I would like to correct a few of Gibbs' statements about Linux. First, Gibbs says, "Linux runs on a more limited range of hardware compared with Windows." However, Linux runs on more

Why you need a QoS scheme

Within weeks of each other, 3Com and Cisco have announced their plans for delivering policy-based management — dubbed, respectively, the 3Com Transcend Policy Manager and CiscoAssure Policy Networking. Both companies have targeted class of service (CoS) or quality of service (QoS) as the first service they'll bring under their policy-based management umbrellas.

It's great that network managers will be able to centrally define policies with regard to CoS/QoS. However, it begs the question: Who needs CoS/QoS, anyway?

There's a long-held belief that in campus networks, bandwidth can solve all problems. Gigabit Ethernet and 622M bit/sec ATM should provide enough bandwidth for anybody, right?

Maybe or maybe not. Think back to fall 1996. Are you running the same applications you were then? How much has your traffic grown since then? How are your response rates?

If your network handles data only, traffic has grown slowly and users rarely complain of poor response times, you're probably in good shape. Adding bandwidth where needed will likely keep your network humming until you have a major change in your application mix or in the number of users on the network.

However, if your traffic has grown by 35% or more or response times have increased by 10% or more and you see these trends continuing, you should seriously consider some type of CoS/QoS scheme. The alternatives are to keep throwing bandwidth at your problems or freeze your applications and associated traffic at their current levels.

Certainly more bandwidth will make data move faster. However, it won't magically make congestion go away or prevent router and switch buffers from overflowing. When one or more packets have to be dropped, do you care if packets from the order entry application get dropped rather than e-mail packets? If you consider the mismatch between gigabit-speed backbones, 100M bit/sec links in building risers and 10M bit/sec links to desktops, you're bound to have congestion points.

More important, adding bandwidth does nothing to change the fact that LANs provide only a best-effort, one-size-fits-all service. Consequently, your SAP R/3 traffic can drown in a flood of PointCast packets, and packets from a video training session can get blocked by a Web download. If you want better control over which traffic gets through, you need some sort of CoS/QoS scheme.

If yours is one of the small but growing number of organizations that are rolling out interactive applications, such as videoconferencing or collaborative whiteboards, you will likely need some type of CoS/QoS to ensure smooth voice and video delivery. You could get by without CoS/QoS if your network consistently is lightly loaded. However, the bursty data traffic typical of LANs can easily clobber real-time

applications such as videoconferencing, making users unhappy.

Fortunately, the industry has developed a few schemes that make CoS/QoS support in the LAN relatively painless. The simplest of these is a prioritization scheme. The IEEE and Internet Engineering Task Force support the same eight levels of priority — the IEEE in its 802.1p specification and the IETF using IP precedence bits in the IP header.

3Com and Cisco are among the many vendors moving quickly to support these prioritization schemes in their switches and routers. In addition, the companies are among the vendors that have worked with Microsoft to ensure that the next releases of its operating systems have the hooks needed to set these priority bits.

Coupled with sufficient bandwidth, these priority schemes will give you the control you need to expedite certain types of traffic. For example, with a prioritization scheme in place, you can define SAP R/3 traffic as high priority so it will be forwarded before PointCast and other low-priority traffic. And if packets must be dropped because of congestion, the low-priority packets will be dropped first.

For organizations that need to control latency, there are more elaborate QoS schemes, such as those supported by ATM and the Resource Reservation Protocol (RSVP). These QoS schemes give you control of bandwidth, latency and accuracy levels (meaning which packets get tossed in case of congestion). RSVP is capable of ensuring that latency doesn't exceed a specified maximum, while ATM goes a step further and can control jitter — the variation in latency, or delay, that a packet experiences as it moves from one device to another across links.

If you're not sure you need CoS/QoS today but think you might in the future, hedge your bets. Buy switches for your wiring closet and the network edge that have two levels of queuing so you can support 802.1p-based prioritization. Similarly, buy core switches, Layer 3 switches, switching routers and routers with multiple levels of queuing (four has become relatively common) to ensure that you can accommodate more levels of prioritization.

The bottom line: If the performance of your mission-critical applications is suffering as network traffic increases, you should plan your CoS/QoS strategy now.

Mary Petrosky is a senior analyst with The Burton Group, an information services firm that provides in-depth technology analysis. She can be reached at (415) 572-0560 or petrosky@tbg.com.

For more on policy-based management, see "Directories in the limelight," page 1.



architectures than Windows, including x86, RISC, Alpha and MIPS. Name almost any commercial platform and there is a working port or development port of Linux to it. Also, Linux supports more PC hardware than Windows NT.

Gibbs also says Linux users don't have "a vendor to complain to if things don't work right." However, Red Hat software offers phone support for Red Hat Linux.

*Ross Campbell
Systems administrator
Oracle Corp.
San Mateo, Calif.*

Mark Gibbs notes that "Linux suffers from a lack of [graphical user interfaces]." But there's one GUI out there already that is quite promising. Check out the work being done at www.kde.org, where the KDesktop Environment development is centered.

It will be interesting to see if Netscape's release of the source code for its browser leads to its adoption as the de facto Linux standard. Depending on the exact licensing terms and the completeness of the release, that could happen rather quickly.

*Rich Kulawiec
Chadd's Ford, Pa.*

Gibbs' column suggests that Linux should be more like Windows. What would be the point of that?

Already, Linux offers its users and administrators far more power, flexibility and reliability than any version of Windows ever has and does this at a lower cost, on less hardware.

Yes, it would be nice to see more applications available for Linux, but the existing kernel and GUI tools are more than adequate for their production.

Making Linux into Windows is not the answer to Microsoft's aggressive tactics.

*Keith Wesolowski
Reno, Nev.*

What we need to do is sell companies on the idea that using Linux and making OpenSource software is great and would give them a competitive edge.

We need a nice, professional and serious-looking Web page/glossy brochure that would pack enough punch to

convince any CEO that it's profitable to support and use Linux. Think business case.

We need a Linux Steve Jobs, someone with so much charisma that companies would

pay to listen to him. Think hard sell.

We need mainstream recognition. Think TV.

*Ricky Ng-Adam
Montreal*

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Directories in the limelight

Continued from page 1

Several developments are setting the stage for directory services' rise to prominence. The emergence of standards such as the Lightweight Directory Access Protocol (LDAP) is providing much-needed vendor interoperability, freeing developers from having to tie their applications or services to a particular directory. Likewise, the Directory Enabled Networks (DEN) initiative, led by Microsoft Corp. and Cisco Systems, Inc., promises to increase momentum for directory services by bringing the physical infrastructure under the directory umbrella and tackling the standardization of directory information itself.

The idea behind all this activity is to enable a single common directory to support all your applications, services and infrastructure. Down the road, you won't have to set up and administer separate directories for your e-mail network, SAP R/3 implementations, remote access authentication services and so on.

The result will be fewer directory setup and maintenance chores, which means increased IT staff productivity. The reliability of directory information also will increase because the information won't be duplicated in numerous places.

Last, but perhaps most important, centralized directories will spawn true policy-based management. You'll be able to establish criteria for how your net should be managed, including response-time targets and authentication policies for different classes of users. The directory will serve as the vehicle that helps enforce policies across the enterprise.

Directory primer

Directories provide a simple way of naming, describing, finding, accessing and protecting resources over space and time. They are the logical

WHERE WE'RE HEADED

A sampling of the roles and functions directories are expected to take on:

- RADIUS authentication functions
- DHCP/DNS functions integration
- Store network configuration information
- Store policy information
- Manage security information, such as certificates
- Function as resource registry for meeting rooms, videoconference facilities and so on
- Act as a foundation for network-centric applications
- Serve as a repository for management data
- Drive event notification-based management
- Handle object or process activation

places at which network services, applications and people meet and interact.

Directories have been around for more than a decade. Banyan Systems, Inc. began shipping the StreetTalk directory service as part of its VINES NOS in 1986. Novell, Inc. began shipping its Novell Directory Services (NDS) with NetWare 4.0 in 1993. These NOS-based directories have allowed network administrators to manage and authenticate users and to administer file and print services.

A major benefit of directory services is they enable you to create a relationship between a logical representation of a resource such as a printer or file "object" and the physical device or resource. If you need to move a printer or a subdirectory to a server with more memory, you only have to change the relationship between the directory object and the physical resource it represents. There's no need to update user logon scripts or otherwise touch desktops. This helps cut desktop support costs.

Directory services also allow users to log on from anywhere on the network, because configuration and other user-related information is stored in the directory rather than in files on the user's desktop. Similarly, because directory services enable associations of logical names and access rights, user access rights don't have to change if a resource is moved.

In addition, extensions can be written that enable functions such as software distribution, password management and customized relation-

ships between users and applications.

Users also benefit from this logical view of the network. Not only can they find the resources they need more easily, they also gain location independence. As more applications and services exploit directory services for user authentication, users will be able to employ a single logon that gives them access to all the resources they need.

Beyond the NOS

Over the past few years, directory services have grown beyond simple NOS administration. An enterprise directory is now recognized as a tool that brings together the management of users, security, applications, services such as e-mail, and network devices ranging from desktops to routers.

"The real power of a directory service is that it provides a common interface for provisioning services and users across a heterogeneous network," notes Lee Rhodes, strategic alliance manager for Hewlett-Packard Co.'s Internet Infrastructure Operation.

Over the past six months, Novell and Netscape Communications Corp. have announced products that clearly demonstrate the power of directory services in easing administration of other network services. For example, several of the components in Novell's BorderManager product use NDS in some way. BorderManager provides a number of Internet-related services, including an IPX-to-IP gateway and a proxy service, that help improve Web performance. Both services look to NDS to determine whether a user is properly authenticated and, if so, which access rights and restrictions apply. NDS also holds the configuration and management information for virtual private networks supported by BorderManager, so there's no need for a separate data store for this information.

Netscape recently announced it is expanding its Mission Control management tool to include directory-enabled administration of Netscape client, server and application software. Currently, Mission Control manages client configuration for Netscape's Communicator. When it releases SuiteSpot 4.0 later this year, Netscape will expand Mission Control to include all administration and security functions of Netscape clients and servers.

For example, under the new version of Mission Control, user profiles will be stored in the Netscape Directory Server rather than on users' desktops, as they are now. This change will allow for location independence for clients as



GUSTAF FJELSTROM

well as simplified, centralized administration.

Netscape Certificate Server also will be integrated with the Netscape directory and Mission Control. Rather than maintain its own database, Netscape Certificate Server 4.0 will use the directory as the repository for certificates. This will allow for centralized, directory-based management of user security credentials such as public-key certificates. For example, administrators will be able to configure Mission Control to revoke certificates when they delete a user from the directory.

The LDAP factor

Directory vendors aren't the only ones getting into the act. Other vendors are looking to directory services to support authentication and other functions.

Bay Networks, Inc. currently exploits directory services natively in BaySecure Access Control, its Remote Authentication Dial-In User Service (RADIUS). Rather than duplicate directory services in its RADIUS server, Bay is directing authentication operations to underlying naming and directory services. BaySecure Access Control is available for Windows NT, NetWare and Unix. Each version uses the directory that is native to its operating system: the NT Domain Naming System, the NetWare bindery or NDS, and the Network Information Services Unix-based naming scheme.

The standardization and subsequent widespread adoption of LDAP has been a key driver behind vendors such as Bay taking advantage of directory services rather than creating their own application- or service-specific directories.

LDAP defines a standard protocol for accessing and updating directory information in a client-server model. As a standard, LDAP provides for vendor-independent directory access and makes directory interoperability possible. While it's neither perfect nor complete, LDAP is making the new directory-based management paradigm possible.

The latest version of the LDAP specification, Version 3, offers significant enhancements over

LDAP or bust



irectory vendors can't announce support for Lightweight Directory Access Protocol (LDAP) fast enough, but delivering it is sometimes a different story. Here's where some of the major players stand.

■ Netscape Communication Corp.'s Netscape Directory Server and Netscape Navigator were written to a prestandard version of LDAP 3.0. Netscape will be able to bring these products into compliance with the standard fairly easily.

■ Novell, Inc. has an LDAP 2.0 server interface that supports read/write access to Novell Directory Services. An LDAP 3.0 implementation is in the works, scheduled for release in the second half of the year. Also, Novell's GroupWise 5.2 has LDAP 2.0 read-only access to the GroupWise address book. Novell has committed to support LDAP on its GroupWise clients.

■ Banyan Systems, Inc. last fall began offering an add-in module that provides LDAP 2.0 read-only access to StreetTalk for Windows NT and VINES. An upgrade module is due this spring to provide LDAP 3.0 support with read/write capabilities.

■ Sun Microsystems, Inc. last fall began shipping its Sun Directory Services, which supports LDAP 2.0 read/write capabilities. An LDAP 3.0-compliant version is due by mid-1998.

■ Microsoft Corp. has committed to using LDAP as a core protocol for accessing Active Directory, and its newer applications are beginning to support the protocol. For example, while Outlook 97 lacks any LDAP capability, Outlook Express supports LDAP 2.0 read/write operations, and Outlook 98 will support LDAP 3.0.

— Mary Petrosky

Version 2. In particular, LDAP 3.0 supports various authentication schemes and has a referral capability so one directory server can forward a client's query to another. In addition, LDAP 3.0 supports schema discovery, so an LDAP client can learn about the structure of the information in a directory. Because LDAP must be able to search, read and update server information on behalf of the client, the client must have prior knowledge of the directory's schema, or have some facility for discovering and interpreting schema.

Support for LDAP has grown rapidly among vendors of directory services. Netscape, Novell, Microsoft, Banyan and Sun Microsystems, Inc. each support the protocol in their respective directories and, in some cases, applications (see story above).

Likewise, network equipment vendors are using directory services for everything from user authentication to policy-based management. Companies such as Bay and Cabletron Systems, Inc. have or are working on LDAP clients for some of their network gear.

Toward policy-based management

As more vendors leverage the common data within directory services, we will begin to see true policy-based management. Indeed, all the leading equipment vendors have committed to exploiting directory services as part of their policy-

based management offerings.

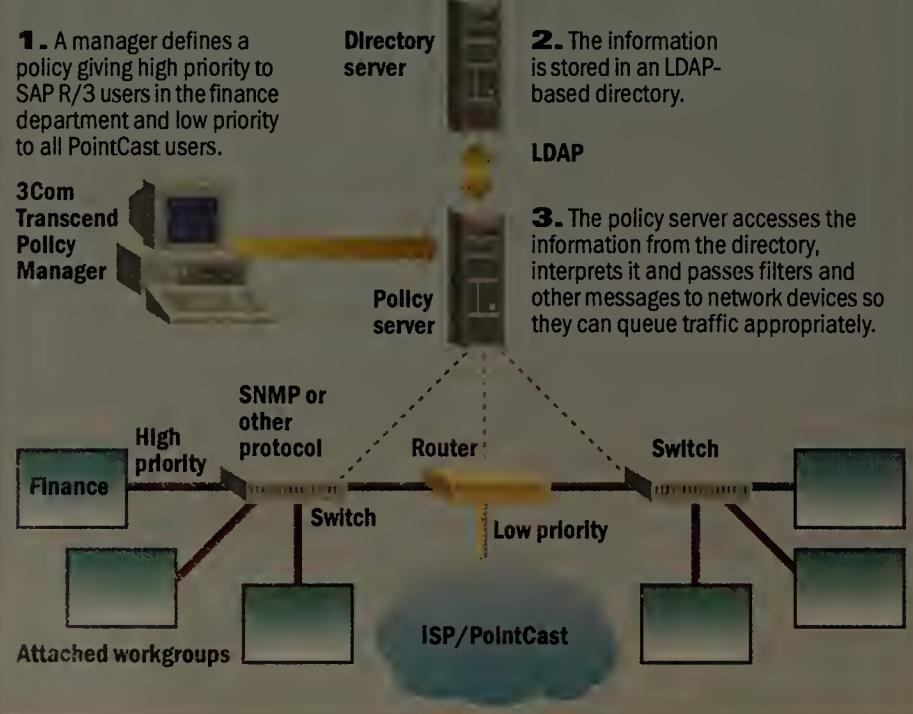
Directory services provide a centralized way for IT managers and service providers to define the policies according to which network services are configured, operated and managed. Policies can be based on criteria such as response time and uptime targets, often broadly referred to as service-level agreements; application and security requirements; and Internet/intranet access needs. Network services and related policies can be tied to individual users, groups of users, organizational units such as departments and companies as a whole.

Cabletron, for example, is licensing Netscape's LDAP 3.0 developers' kit and will implement LDAP clients on its high-end Smart-Switches by mid-1998. LDAP support will enable the switches to communicate with the Netscape directory to discover information about user logon names and corresponding security rights. That in turn enables the switches to apply user-based policies. Cabletron also will store key network information in the directory, including a user's IP and media access control address and related switch port information.

3Com Corp. has similar plans. Customers will use 3Com's Transcend Policy Manager application to configure policies, which will be stored in a directory server. A separate policy server will access the policy rules in the directory via LDAP and interpret them on behalf of various types of network equipment (see Figure 1). 3Com expects to ship its Transcend Policy Manager application and LDAP-based policy server in the third quarter and will initially support Netscape's directory for NT and Novell's NDS for NT.

Bay is creating a policy-based management system that combines an LDAPv3.0 server with its NetID platform, which is a set of services for managing IP addressing, Domain Name System (DNS) and Dynamic Host Configuration Protocol (DHCP) servers. Bay recently inherited

FIGURE 1: 3COM'S POLICY-BASED MANAGEMENT SYSTEM



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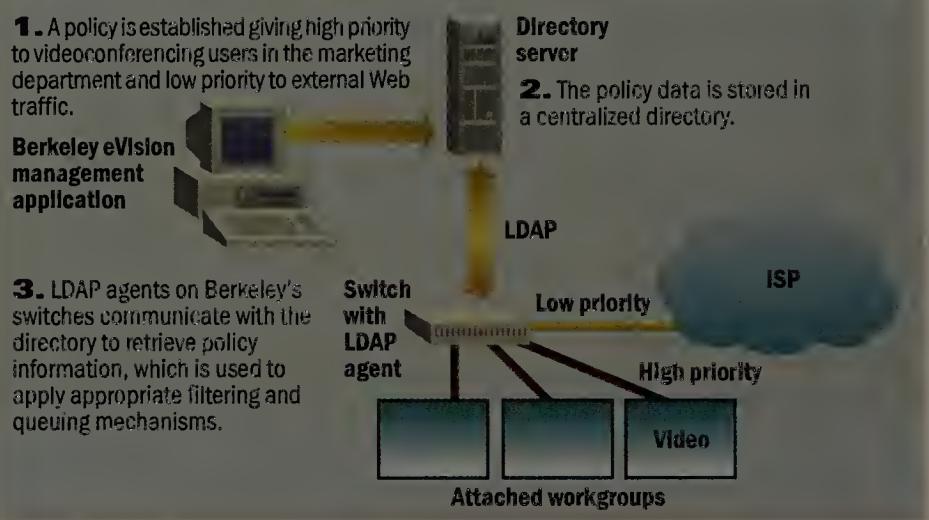
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its first LDAP-enabled policy-based management capability when it acquired New Oak Communications, Inc. New Oak has implemented an LDAP 2.0 client and server for managing the setup of tunneled sessions and VPNs and for authentication services on the NOC 4000 access device.

Cisco recently announced its road map for policy-based management, key pieces of which will ship in the second half of the year. Like other vendors, Cisco will provide a management application for configuring policies. Initially, Cisco will store policy information in policy servers, which will communicate with network equipment via mechanisms such as the command-line interface. Longer term, Cisco will use the Common Open Policy Service protocol, currently being defined by the Internet Engineering Task Force, to pass policy information from a policy server to network gear.

Like Bay, Cisco will initially use its DNS/DHCP platform, which it calls the network registry, for host name and IP address information. The company will provide directory access via LDAP 3.0 to enable policies based on user and group information. In 1999, Cisco will provide full integration of its policy management system with Microsoft's Active Directory, including support for the DEN specification.

FIGURE 2: BERKELEY NETWORKS AND ITS LDAP AGENTS



Even start-ups are taking advantage of directories. Similar to New Oak, Berkeley Networks, Inc., of Milpitas, Calif., has developed what it calls "application-aware" Ethernet switches that will use directory services for configuration data, as well as for policies that cover security and access, class of service, routing and naming.

Rather than wait for the DEN specification to evolve, Berkeley defined its own schema extensions that characterize its switches. The company also created extensions to standard directory browsers so network administrators can view and manipulate the switches and related information within the directory tree structure.

For example, an administrator can click on an NDS tree and drop the Berkeley switches into any part of the directory. Clicking on the switch object will bring up a window that offers various options, such as to view the switch's name, serial number, location and software release, or to set policy for class of service on an application-by-application basis.

The Berkeley switches include an LDAP client that can be used to communicate with the directory (see Figure 2). Berkeley initially will support

any LDAP-accessible directory and expects to deliver this capability in the second quarter.

Future roles

A number of industry players envision an even more expanded role for directory services in systems and network management.

Proponents of the DEN initiative want to store information about network services and device configuration in the directory. While not all vendors are enthusiastic about this aspect of the DEN work, Lionel Gibbons, director of 3Com's TranscendWare Product Group, believes such an effort could vastly simplify the configuration of multivendor equipment.

If vendors support a common schema, customers will be able to configure devices by defining objects in a directory, Gibbons says. So rather than having to know how to configure a 3Com or Cisco switch, you simply would configure a "generic" switch. Vendors would have to enable their network equipment to read this high-level configuration information out of the directory and translate it in a way that's specific to their devices.

Cisco envisions directories playing a role in event management rather than merely acting as a repository for information and relatively static

relationships. For example, if an "event" occurs, such as the clock striking 5 p.m., the directory could trigger a series of operations, perhaps limiting access to the accounting server, switching routes for WAN traffic and kicking off a bandwidth reservation for server backup.

Marc Trachtenberg, a principal at consultancy Mycroft, Inc., in New York, has a similar vision. "Objects in the directory need to be activated by events and take responsibility

for their domain of influence," Trachtenberg says. "The real value in directories will be having the authority to make event-driven decisions about the relationships they're managing."

It will take time for directory services to step into this expanded role. Technical issues related to directory performance and scalability must be tackled, including the creation of a standard for replicating data among directory services. Likewise, the effort to define a common schema has barely begun and will easily extend into 1999.

Directory payback

Even so, there's plenty you can be doing now to directory-enable your enterprise.

For many organizations, the biggest hurdle is getting a good understanding of your business processes. Also, be aware that the decision to implement directory services can precipitate political battles if all arms of IT — as well as key business managers — aren't involved or if the rollout isn't handled diplomatically.

In terms of hard costs, the directory software is the main expense. However, there are a number of "soft" costs, of which planning is the largest.

Get more online:

- **A Rapport Communication presentation on directory economics**
- **Information on the Directory Enabled Networks Ad Hoc Working Group and links to resources that describe relevant standards such as LDAP**
- **Papers that describe Berkeley Networks' directory-enabled switches, from the vendor's site**

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Trachtenberg notes it is necessary to consider the staff or consultant time needed to create a directory model, evaluate products and learn how to use and manage the directory service. The planning process can take months.

Consultants at firms such as Mycroft and Rapport Communication, of Silver Spring, Md., agree that you should begin the process of architecting a directory now. You can take a tactical approach, if need be, and see which areas of your organization would immediately benefit from a directory implementation. For example, the integration of Novell's NDS and Bay's RADIUS services may be a compelling first step.

Likewise, roll out products that support LDAP clients and servers as they become available from your key vendors. New versions of e-mail clients and servers would be a good start.

Trachtenberg also recommends that the various arms of IT, including the infrastructure, application development and support staff, begin to document the relationships between users, applications and other resources. Next, organize resources by business function, not by physical devices. Take into account your remote and mobile users in planning the directory.

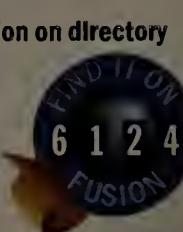
The process of building a directory is difficult, whichever directory you choose, so the sooner you get started, the better. As Trachtenberg notes, there's no sense waiting for Microsoft's Active Directory to ship; it will be relatively easy to migrate to it when the time comes, if you so choose, as compared with implementing your first directory.

All this work has a payoff, of course, and it comes in the form of reduced administration costs.

In light of tight IT budgets and the constant scramble for support staff, directory services offer a concrete way to gain management efficiencies. Mycroft is among the consulting groups that have demonstrated that directory services can pay for themselves in less than a year. Rapport notes that savings increase as you continually phase out duplicate directories. The value of directories will increase even more as policy-based management and other directory-enabled services are delivered.

The companies that begin to exploit the benefits of directory services now will be in the best position to follow its rising star.

Petrosky is a senior analyst at The Burton Group, an information services firm that provides in-depth technology analysis. She can be reached at (415) 572-0560 or petrosky@tbg.com.





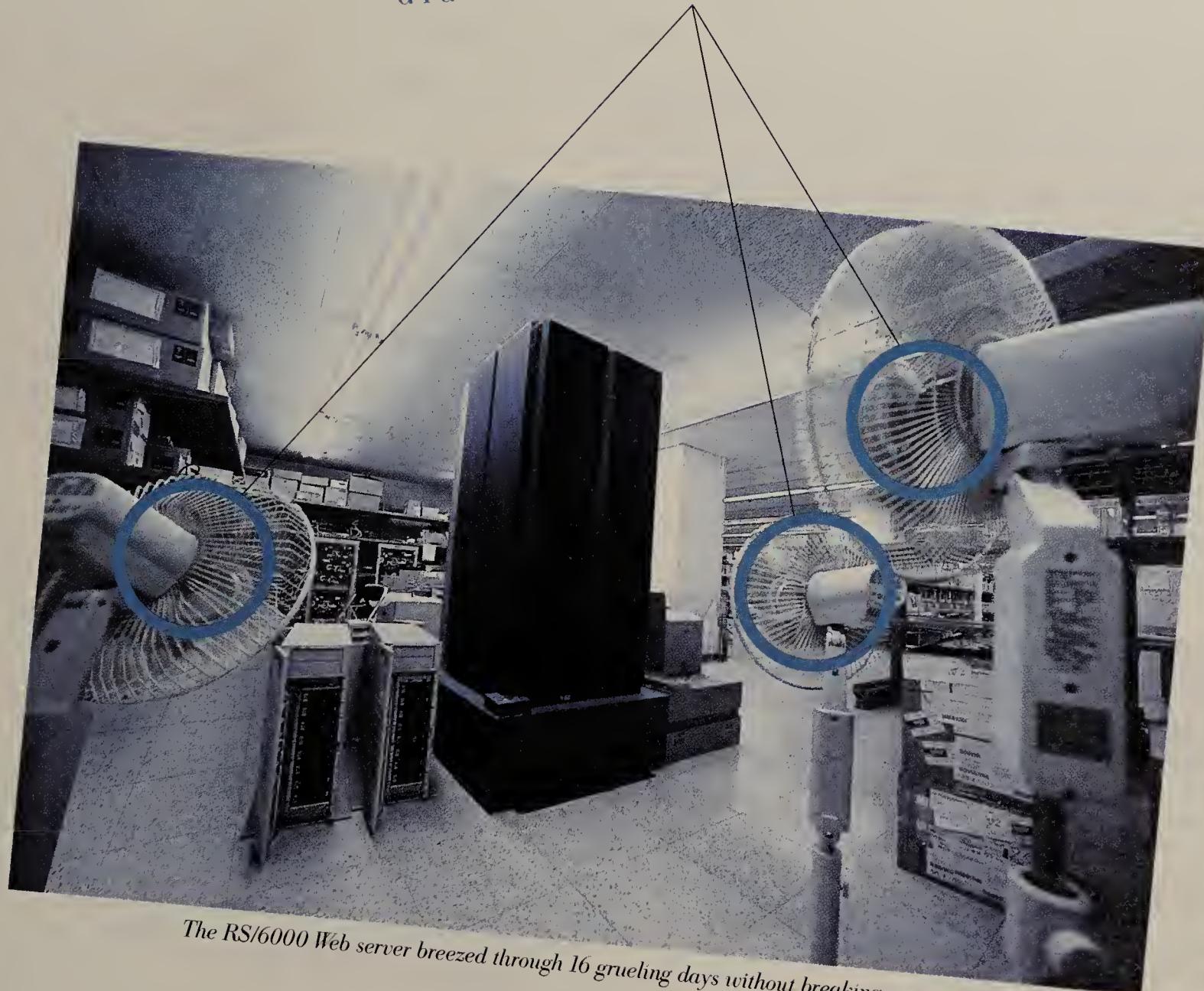
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WHITE PINE'S MEETINGPOINT SERVES UP VIDEO-CONFERENCE, BUT DON'T PLAN A BIG ROLLOUT YET.

Meet me on the net

By Lee Schlesinger

Today, knowledge workers can practically live in their offices. With a stash of snacks, a comfy chair and a high-speed Internet link, the only thing forcing cubicle rats to leave their lair is an occasional meeting. You may be able to eliminate even that obstacle with White Pine Software, Inc.'s MeetingPoint Conference Server 3.0. MeetingPoint lets anyone with a cheap digital camera participate in group videoconferences without leaving his desk.

MeetingPoint supports not only clients running the vendor's Enhanced CU-SeeMe videoconferencing software, but also any client running the H.323 videoconferencing and T.120 teleconferencing protocols, including Microsoft Corp.'s NetMeeting.

But you probably won't want to put MeetingPoint on your CEO's desk just yet. A lack of administration tools and a clunky administra-

work, either locally or via the Internet. Once connected, they can communicate with any combination of voice, video or text chat. In effect, it is a reflector that provides group conferencing, without which CU-SeeMe is just a point-to-point communication tool.

MeetingPoint supports multiple conference servers (for sites with heavy conferencing loads) and multiple conferences per server.

To connect to a conference, users need to run a compatible client. A natural choice is White Pine's Enhanced CU-SeeMe, or any other version of CU-SeeMe including the original developed by Cornell University.

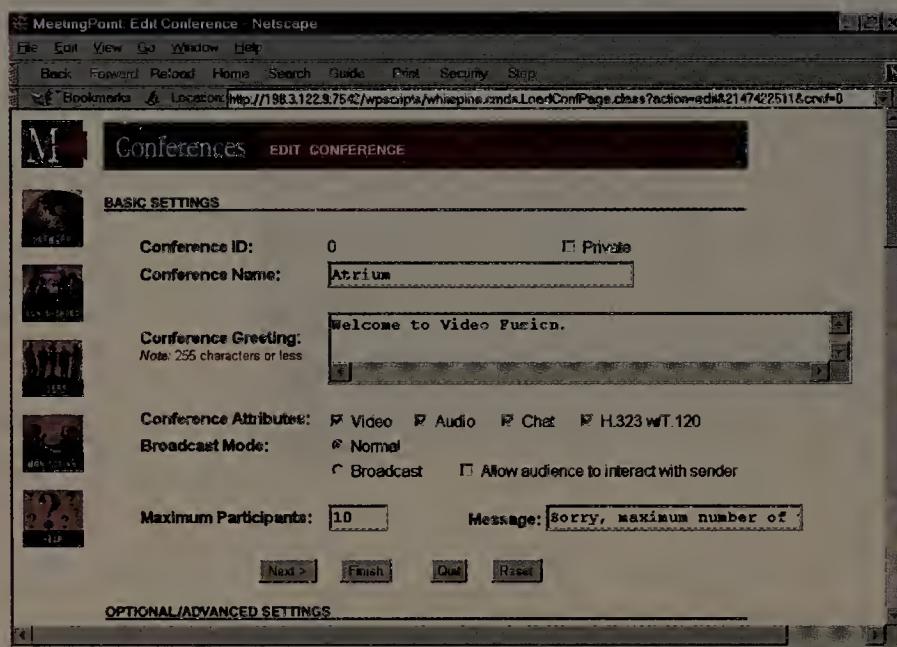
Because it supports T.120 conferencing, any T.120 client also can connect to a MeetingPoint conference. But because of the immaturity of software that supports T.120, T.120 clients can only see other like T.120 clients.

Don't expect full-motion 30 frame/sec video when many participants are logged on to a conference. We were lucky to get 1 frame/sec most of the time. Clients can limit their send and receive rates, which helps lighten the load on the server but makes

for an even worse viewing experience.

Three paths to administration

There also are several ways to impose limits on the server side. An administrator can control bandwidth usage and define client access to conferences as well as set up billing information and perform housekeeping on product



MeetingPoint's Web-based administration interface offers only basic configuration functions, and lacks robust monitoring tools. The interface consists of basic HTML fields and hyperlinks.

tive interface make the product suitable only for sites where videoconferencing is not a mission-critical application.

Good intentions

The concept behind MeetingPoint is a good one. The MeetingPoint server acts as a host that enables clients to communicate over a net-

Score Card

MeetingPoint

Administration (20%)	6 x .20 = 1.2
Functionality (20%)	8 x .20 = 1.6
Client compatibility (20%)	6 x .20 = 1.2
Monitoring (20%)	2 x .20 = 0.4
Installation (10%)	9 x .10 = 0.9
Documentation (10%)	10 x .10 = 1.0
Total score	6.3

Individual category scores are based on a scale of 1–10. Percentages are the weight given each category in determining the total score.

parameters.

There are three ways to administer MeetingPoint. The easiest is simply to edit the program's configuration file. The file betrays the program's origins; it looks like a list of Unix commands — cryptic pseudo-words with parameters preceded by a hyphen. You also can telnet in to the server to make configuration changes. If you choose to go either of these routes, be sure to have the documentation at your side.

A more comprehensible approach is to use the software's built-in Web-based interface. From any Java-capable browser, you can access a graphical interface that enables you to change the most important parameters of the product. For example, you can add, edit and remove conferences, set passwords for conference participants and change the messages people see when they log on to the server or a conference (see graphic).

Net Results

MeetingPoint Conference Server 3.0

White Pine Software, Inc.

(603) 886-9050

www.wpine.com/mp/index.html

From \$4,000 for 10 users to \$20,000 for 100 users

PROS

- ▲ Runs on Windows NT and Solaris
- ▲ Compatible with T.120 clients

CONS

- ▼ Lacks basic logging of user connection times
- ▼ Lacks ability to archive chat conferences
- ▼ Web-based administration is cumbersome

Because the administrative applets are written in Java, they're slow. And because they run within a browser, they lack the sophistication of a stand-alone program. Administrative pages are simply HTML tables, so you can't, for instance, get any information by clicking the right mouse button.

TEST CENTER

Request For Comment

We'd like to solicit your suggestions for products to evaluate in several upcoming *Network World* reviews. Send the names of companies and products you'd like us to look at to Test Center Director Lee Schlesinger at lee_schlesinger@nww.com.

Product categories include:

- Internet usage monitoring and reporting software
- Windows NT administration tools
- ATM switches
- Firewalls
- Internet telephony gateways and servers
- Inventory/asset management software
- License metering software

Our biggest regret, however, is the lack of monitoring tools built in to the server. We wouldn't expect to archive voice and videoconferences, but you can't even keep a log of the chat sessions that conference participants type to each other. You can log the times users logged in to and out of each conference, but the log file can't be browsed from the graphical administrative interface. You can see a list of users currently logged in, but the display is not dynamically refreshed, meaning a list snapshot taken five minutes ago may be totally out of date unless you do a manual refresh.

Installation and documentation

At least MeetingPoint is easy to install. A single CD-ROM lets you install MeetingPoint on a server running Windows NT Server 4.0 or Sun Microsystems, Inc.'s Solaris 2.5. You need a fast server with at least 64M bytes of memory and a speedy network interface card because videoconferencing puts a heavy demand on server CPU, memory and network subsystems.

White Pine's single volume of documentation is half user's guide, half

reference appendix that comprehensively details the product's many configuration options.

In our view, MeetingPoint is fine for low-end videoconferencing, but it's not ready to be a vital tool for corporate use.

In order for it to hit the big time, White Pine needs to upgrade its administrative features, add an administrative tool that doesn't rely on Java and a Web browser and incorporate a more detailed log of conference activity.

Until then, it looks like most workers will still have to leave their offices on occasion. Maybe that's not such a bad thing. ■

Go online to:

- Download a trial version of MeetingPoint
- Read a previous review of White Pine's Enhanced CU-SeeMe
- View two lists of CU-SeeMe resources
- Find Web-based video-conferencing reflectors
- Learn about the H.323 and T.120 standards

www.nwtfusion.com

6 1 2 5

How We Did It

We installed MeetingPoint Conference Server 3.0 on a Micron Electronics, Inc. Vixi 2Mxi server with dual 200-MHz Pentium Pro CPUs and 64M bytes of memory. The server ran Windows NT Server 4.0 with Service Pack 3. To participate in conferences, we used a variety of client PCs running White Pine's Enhanced CU-SeeMe 3.1 and Microsoft's NetMeeting. Our video hardware included Philips Consumer Electronics Co.'s EasyCam and VideoLabs, Inc.'s FlexCam camera and Stinger video capture board.

We set up a single videoconferencing server, then added, removed and edited conferences using the product's Java administration applets from within Netscape Navigator 4.04. We used the product's administration tools to monitor and manage conferences and users.

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Management Strategies

Hangin' at the tech playground

Forward-thinking company gives its employees a subnetwork where they can experiment with emerging products and technologies.

By Tom Duffy

Nathan Mehl doesn't have a lot of free time at work. In addition to being the network security manager at Cohesive Network Systems, Inc.'s (CNS) New England division, in Cambridge, Mass., he's also a consultant for the systems integrator.

But when he does get a spare minute, it's a good bet that he can be found playing around in the company "sandbox," a subnetwork set aside for employees to let off some steam by experimenting with technologies they typically don't get to work with on the job.

Lately Mehl has been learning the finer points of Berkeley Internet Name Daemon, an application that translates domain names into IP addresses.

Mehl downloaded the program from the Internet and has been practicing using it on the sandbox network, which is segregated from the company's LAN so employee experiments don't impede more important work.

"It's definitely one of the best perks we get," Mehl says. "It's a good incentive to go out and play with more things that will eventually benefit me and the company."

Corporate romper rooms

Because network professionals and other technical employees are in high demand, more and more companies are creating similar technology playgrounds to help retain qualified employees. The playgrounds also appear to be popular in nontechnical companies that sometimes have trouble holding on to employees who don't always get a chance to work with cutting-edge technologies, says Tim Walsh, a vice president at Blessing/White, Inc., a human resources consultancy in Princeton, N.J.

"Companies in the service sector, such as banks, find they are competing heavily with the

consulting firms for IT people," Walsh says. "You've got turnover rates of 20% to 30%, so these people are willing to try almost anything."

Although retention may be more of a problem in certain industries, all types of companies can benefit by adding an opportunity for fun to the workday.

Take CNS, formerly known as LeftBank. Turnover isn't a problem there because company founder Bob Antia set out to create an attractive working environment.

"It's a good incentive to go out and play with more things that will eventually benefit me and the company."

Nathan Mehl, network security manager, Cohesive Network Systems

"I think people just want to be appreciated, have fun and do things that interest them," says Antia, now a managing partner for CNS' New England division. "It's just one part of an overall employee retention strategy."

Before starting LeftBank four years ago, Antia worked in the theater industry creating special effects for such Broadway productions as "Les Misérables." Although there weren't any technology playgrounds there, he learned a few universal truths about how to treat employees.

"The only real assets are your people, and you really have to treat them like assets," he says. "They're not numbers on a spreadsheet."

Outfitting the playground

The CNS sandbox began with a few servers. It has since grown to include a half dozen Sun Microsystems, Inc. servers, a couple of routers and a host of applications and technologies. The



"People just want to be appreciated, have fun and do things that interest them."

Bob Antia, managing partner, Cohesive Network Systems

cost has been limited because most of the equipment has come in the form of hand-me-downs from customers who were upgrading.

For example, a customer recently donated some Fibre Channel and ATM cards. Because CNS' staff doesn't use either high-speed technology very often on the job, Antia says it makes sense to add the adapters to the sandbox network.

This hints at two other corporate benefits of the playground: It lets employees experiment with technologies they might be able to apply on the job. And by setting aside an area of the network where workers can hook up their own devices and experiment with new applications, Antia figures employees are less likely to accidentally cause problems on the corporate LAN.

For his part, Mehl takes full advantage of the perk. A while back, he tested a one-time usage password system that he later incorporated into the company's IP network. Lately he's been playing around with several new encryption and authentication tools. Eventually, he hopes to propose moving the tools over to the company network to improve security.

But the sandbox also provides some amusement. Mehl has a private domain that resides on one of the servers. Meanwhile, one server runs a mailing list for aficionados of Stellar Crisis, a Web-based game, and another hosts the Web site for Radio Free Allston, a Boston group that promotes nonregulated radio broadcasts.

"It helps keep the job fun," Mehl says. "And rather than just building things for clients, it lets me feel like computing is still something I'm committed to and experimenting with."

Duffy is a freelance writer in Somerville, Mass. He can be reached at tduffy62@compuserve.com.

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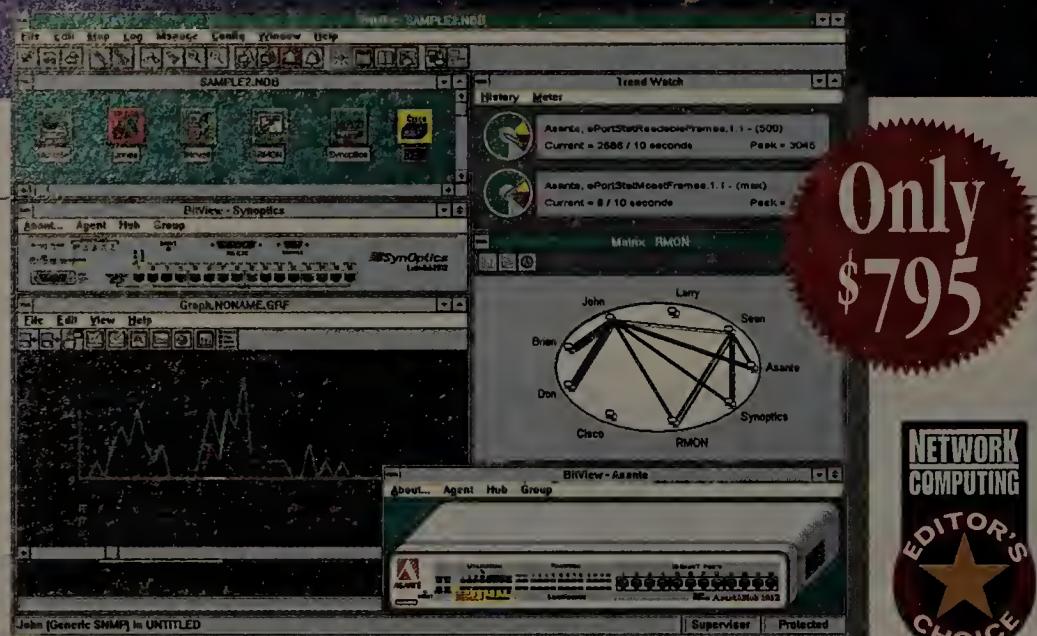
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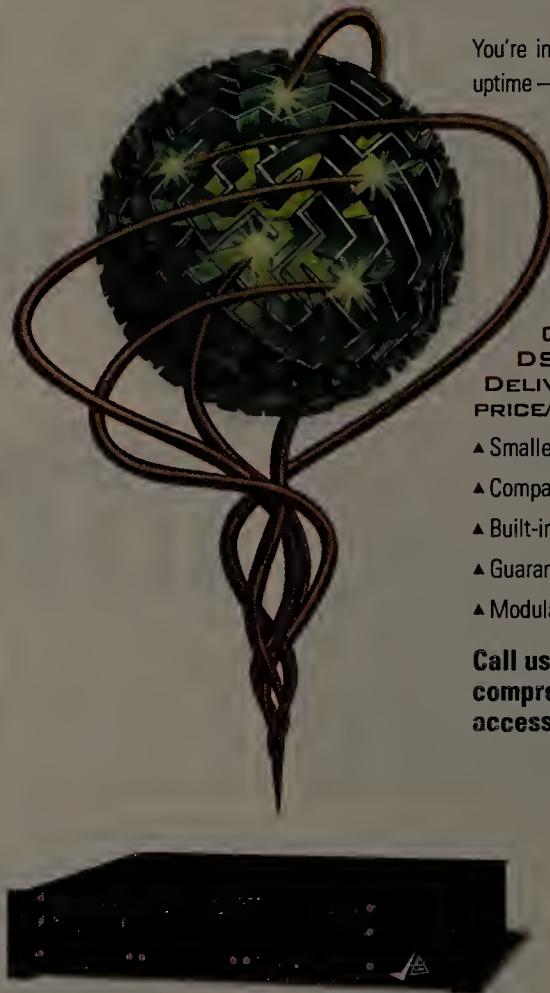
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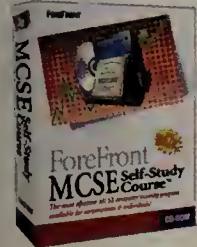
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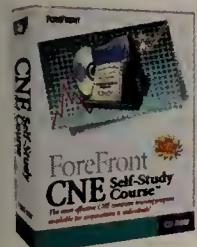
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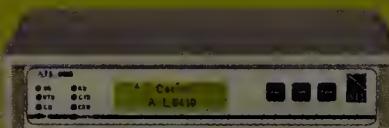
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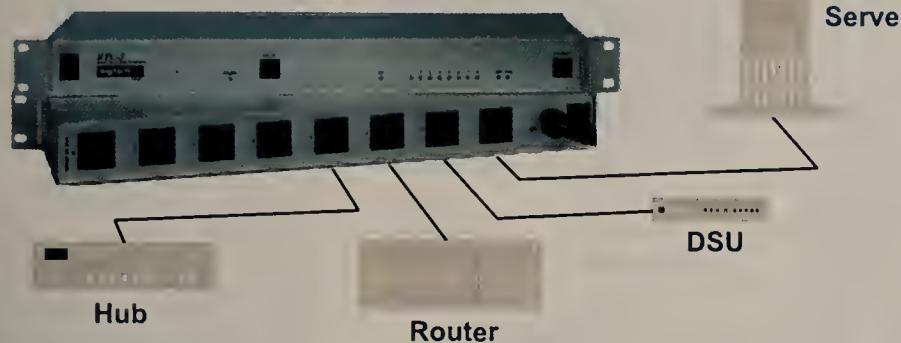
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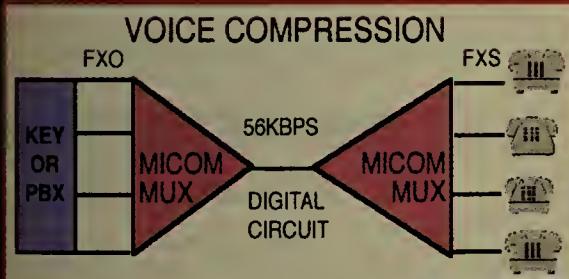
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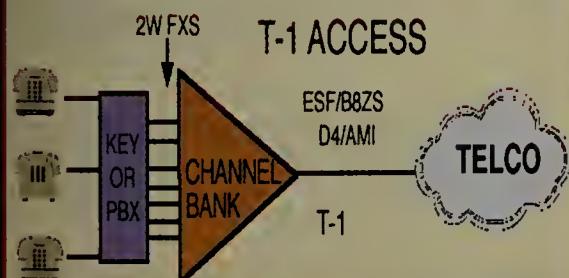
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EDITORIAL INDEX

3Com.....	1,4,8,21,28,41,62	G	Q
A		Ganymede.....	28
Accel Partners.....	62	GridNet.....	31
Alcatel.....	1	GTE.....	32
Andover Advanced Technologies.....	62	H	R
ANS Communications.....	31	Hiway Technologies.....	31
AOL.....	37	HP.....	1,8
Ascent.....	4	I	S
Astound.....	37	IBM.....	1,6,8,15,16,28,37,58
Atcon/Info.....	31	INS.....	25
AT&T.....	1,8	Intel.....	1,10,16,22,62
Auspex.....	10	IXC.....	32
Avenir.....	28	K	T
B		Kaspia.....	25
Banyan.....	1	L	U
Bay.....	1,4,28	LCI.....	1
Bell Video.....	34	Lotus.....	4,8,58,59
Berkeley.....	1	Lucent.....	1,62
Best Internet Communications.....	31	M	V
C		Marlmba.....	4
Cable & Wireless.....	31	MCI.....	1,8
Cabletron.....	1	Mercantec.....	10
Centropolis.....	21	Microsoft.....	1,6,8,10,16,22
CGX Communications.....	31 23,24,26,31,37,39,48,59,62	
Cisco.....	1,4,10,25,28,39,41,62	N	W
CNS.....	50	NCR.....	37
Cobalt.....	4	Netscape.....	1,6,8,37,39,59,62
Compaq.....	1,10	NetSpeed.....	10
Compatible.....	25	Network Associates.....	4
CompuServe Network Services.....	31	New Oak.....	1
Concord.....	25	Newbridge.....	1
Cortelyou.....	34	Nextband.....	34
Covad.....	60	Nortel.....	1,62
CyberCash.....	10	Novell.....	1,21,37,39,58,62
D		O	X
DeskTalk.....	25	ODS.....	21
Digital.....	21,28	Oracle.....	6
E		P	Y
EarthLink.....	37	PC DOCS.....	37
Exodus.....	4	Precept.....	10
F		PSINet.....	32
Fulcrum.....	37	PSINet Telecom.....	32

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Advertiser	Reader Service#	Page#	URL	PSI Net	
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Novell

Continued from page 1

Conn.-based Gartner Group, Inc. He estimated that as many as 25% of Novell users are looking to move toward NT. Network operating system (NOS) sales will have a far-reaching effect on the success of most other Novell products because they depend on either NetWare or Novell Directory Services (NDS) to work, MacDonald said.

And in an informal survey of 50 *Network World* readers who also identified themselves as longtime Novell customers, one-third said they aren't buying as much Novell software as they did in the past. Only half are looking to upgrade their servers to Novell's next generation of NetWare. And 28% said they won't be buying any more Novell prod-

ucts at all (see graphic).

The survey data flies in the face of recent Wall Street predictions that Novell is turning the corner due to a streamlined workforce, two profitable quarters and a ramped-up product delivery schedule (*NW*, March 2, page 1).

Users interviewed for the *Network World* survey don't deny that Novell has fundamental strengths. In fact, many were intrigued by new Novell products such as NDS for NT, BorderManager and the yet to be released ZENWorks, an NDS-enabled desktop management suite.

And Novell officials contend its NOS shipments this year have already increased. Two-thirds of its 1998 first-quarter sales were new NetWare sales. However, officials could not say whether they sold the servers into new or

existing accounts.

Longtime Novell customer Hallmark Cards, Inc., in Kansas City, Mo., is not letting loyalty hold it back from looking at NT 5.0 as an upgrade path for its 60 NetWare 4.X servers. "My responsibility is to be unbiased and look at the best product for the company regardless of the vendor whether that is NetWare 5.0 or NT 5.0," said Dan Blevins, a technical analyst at Hallmark.

Blevins doesn't consider NT 4.0 robust enough to replace NetWare's enterprise-level file, print and management duties. "But NT 5.0, once Microsoft gets the kinks worked out of the directory service, could be something we go to in the future," Blevins said.

Additionally, Hallmark is taking an even closer look at NT 5.0 because Microsoft is openly courting the company's upper management. Microsoft flew three of Blevin's managers to its Redmond, Wash., offices for high-level briefings.

"Without that song and dance, NetWare would have remained the choice for us," Blevins said.

One of New York's largest insurance brokerage firms also suffers from internal turmoil about a possible switch to NT. Chris Murphy, assistant vice president in charge of networking at J&H Marsh & McLennan, Inc., strongly favors upgrading the firm's 200 NetWare 3.X servers to either NetWare 4.X or 5.0.

But because J&H Marsh & McLennan's management sees Microsoft as a more financially stable company, it wants to make the switch to an all-NT infrastructure.

At Delta Beverage Group, Inc., a Pepsi-Cola and Miller beer distributor in Memphis, Tenn., NT 4.0 application servers currently outnumber the NetWare 4.11 file servers eight to five. While MIS manager John Howell has no plans to get rid of the Novell boxes, he is looking for ways to manage all of the servers from one central point. He would like to use NDS for NT but is balking at the \$70-per-user price tag.

"If Novell was really trying to keep my business and push NDS as a standard technology, they would give me NDS for NT for free," Howell said.

Users are divided on how they think Novell should handle NT as it gains more and more popularity.

Some say Novell should play up the coexistence angle.

"Microsoft is not going away. So Novell should be concentrating on more integration tools like NDS for NT," Howell said.

But others favor a more vocal campaign against Microsoft.

"Why has Novell been so silent on the whole [Department of Justice] vs. Microsoft monopoly scuffle?" asked John Mazzella, IS manager with Alexandria, Va.-based Commonwealth Scientific Corp. His company currently is looking at upgrading its 200-user NetWare 3.X servers to NetWare 5.0.

"They need to get in there and fight or they may soon be looking at Microsoft dominance on the server side," Mazzella said. ■

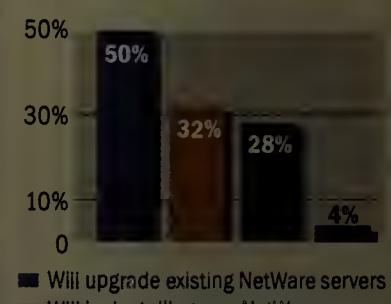
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NETWORK WORLD READERS OUTLINE THEIR NOVELL PURCHASE PLANS

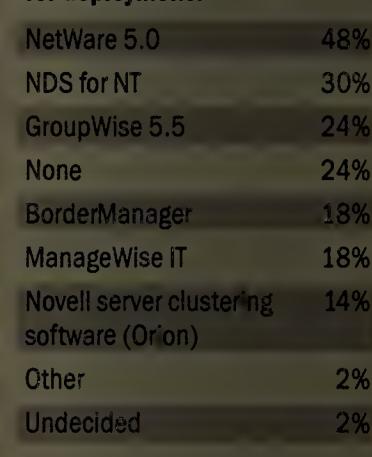
How much Novell software do you purchase now in relation to one year ago?



Do you plan to buy NetWare in the future?*



Which of the following Novell products are you considering for deployment?*



* More than one response was allowed.

Based on a *Network World* survey of 50 readers conducted by First Market Research, of Austin, Texas.

Schmidt's happy anniversary



April 1 will mark the one-year anniversary of Java visionary Eric Schmidt taking control of the previously rudderless Novell, Inc. ship. When Schmidt took the helm, Novell was mired in corporate overhead, facing consecutive quarterly losses and having its market share plowed over by the Microsoft Corp. marketing bulldozer.

Schmidt recently spoke with *Network World* Editor in Chief John Gallant and Senior Editor Christine Burns about how he has positioned the company to face its biggest threat, Microsoft's Windows NT. Below are excerpts from the conversation.

What is your argument for choosing NetWare 5.0 over NT?

The technical answer is that our architecture gives us between a factor of two and a factor of 10 better performance over any of our competitors. If you run the same function on both platforms, we take fewer servers to accomplish the same goal.

There is this confusion that all operating systems are the same. They're not. NT is essentially a Unix clone. NetWare is different because it was built to be very, very fast and do only a few things.

It is the right hammer-for-



the-job type of argument.

So how are you going to be more vocal against Microsoft?

We need to define what we do best. We don't want our competitors to define us. You fall into a trap when you keep responding with what Microsoft does.

Our message is that we are going to be the best cross-platform networking services vendor. We are already the largest.

Look at ZENWorks as a great example of directory-enabled applications. Having hot, interesting products in our specialized market is going to help us a lot.

How are you going to hang onto your installed base by being a so-called specialized vendor?

There is this knee-jerk reaction that Microsoft will take over the world, and I think the answer is fairly clear now that specialized vendors will do quite well in a Microsoft-centric world.

We will be able to hang onto the installed base. The customers I talk with basically want to move from their current IPX/SPX file and print servers to TCP/IP directory-enabled servers in a very seamless, low-cost, zero-risk way.

The upgrade to [NetWare 5.0] is a far, far less expensive maneuver than it is to move to NT or anywhere else. ■

Schmidt's pedaling influence

Eric Schmidt's Novell, Inc. is worlds apart from the company of yore. Novell insiders said it's now a place where engineers get equal say, cool ideas quickly rise to the top and product cycles are short.

"You can't go to Eric with a half-baked idea and bamboozle him. He asks the tough questions that weed out the good ideas from [those presented by] guys who don't know what they're talking about," said Drew Major, Novell's chief technologist.

Major said having a CEO with a Ph.D. in computer science helps Novell avoid costly digressions like those that have peppered Novell's past.

"Eric's not going to pick up efforts like AppWare, NEST or the SuperNOS," Major said. "He'd recognize early on that those things just don't fit in with the company plan."

Schmidt can make a product out of a good idea and get it out on the market quickly, said Michael Simpson, a Novell marketing director.

Simpson noted that the product cycle for BorderManager, Novell's Internet access management software, spanned nine months from conception to first customer shipment.

Simpson told how only last summer a lower-level engineer brought the idea for ZENWorks, Novell's directory-enabled desktop management suite, directly to Schmidt. That product is in beta now and expected to ship next quarter.

"He's broken down all of the old political barriers to getting products out the door," Simpson said. But Schmidt hasn't sacrificed quality-control measures in the process. In fact, he's added a step—his own personal touch.

Schmidt is the last engineer to touch all Novell gold code. In a new lab adjacent to his office, Schmidt runs a battery of tests on all Novell software before it ships. "You can't be more in touch with your product than that," said Coleman Barney, NetWare marketing director.

—Christine Burns

Microsoft Outlook 98 mail giveaway lacks enterprise oomph

By Paul McNamara

Microsoft Corp.'s upcoming e-mail client, Outlook 98, will be available for free Web download when it ships later this month, the company announced last week.

However, before corporate IT managers start salivating over the thought of thousands of free clients, they should know that the offer is for single end-user licenses only, with no redistribution rights. Those desiring multiple copies will have to download them individually or purchase CD-ROM copies from Microsoft at \$9.95 apiece.

"We want to give people every reason to try the product," said George Meng, group product manager for Outlook. The free download offer will last 90 days, after which new Outlook 98 customers will pay a suggested retail price of \$109 per copy.

Microsoft previously announced that existing Outlook 97, Office 97 and Exchange Server customers would receive a free upgrade to Outlook 98.

The new version adds features that let users continue working on e-mail while synchronization or downloading takes place unseen in the background. It will cut download time by replicating only those fields that have changed, Microsoft claimed.

Additional standards support will be added, including Secure Multi-purpose Internet Mail Extensions and HTML Mail. Also included will be a "Today's Outlook" view that captures a user's daily e-mail, calendar entries and task list in a single view.

According to industry experts, the free distribution plan will help the company gain ground among consumers and in smaller businesses, but it probably will not matter much in Microsoft's heavyweight fight for enterprise supremacy vs. Lotus Development Corp.

"I just don't see how [the offer] is going to fit into the corporate world," said Gary Rowe, an analyst with Rapport Communications, based in Roswell, Ga. "It's most important to the consumer market."

Bargain of the century

However, the "seeding" impact could prove to be considerable, said Tim Sloane, an analyst with Aberdeen Group, Inc., in Boston. "I think it's the bargain of the century," he said. "Anybody who is interested in trying out a new personal information management approach should absolutely download Outlook and take a look at it."

The giveaway may put additional pressure on second-tier messaging players such as Netscape Communications Corp. and the Eudora Division of Qualcomm, Inc.

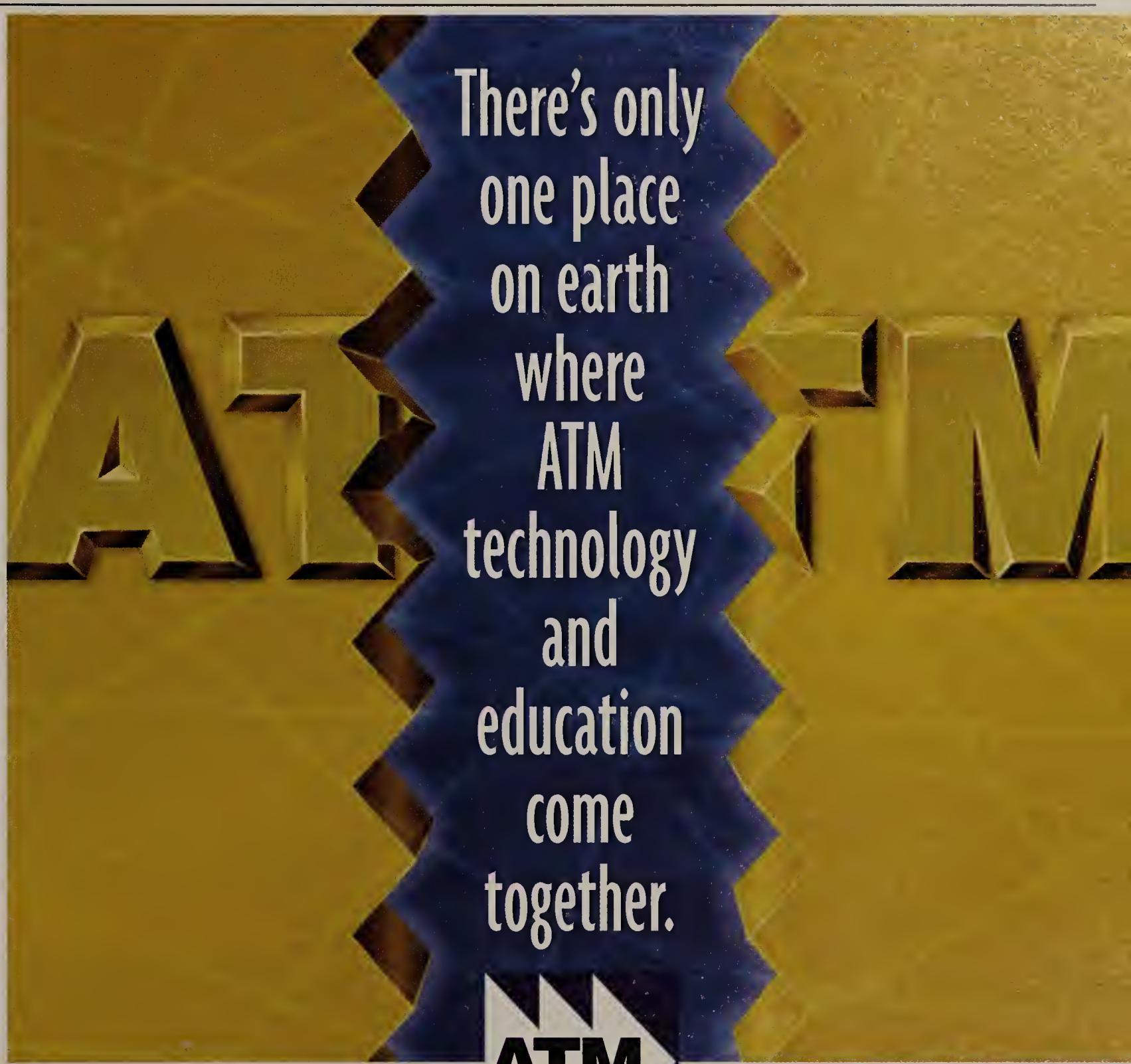
Netscape only recently began giving away its Communicator Standard Edition and charging a scant \$29 for Communicator Professional Edition. A spokesman for

Eudora said the Microsoft announcement would not effect the pricing of \$39 per copy for Eudora Pro and \$59 for Eudora Pro CommCenter.

"If I were a competitor to Outlook, if I

had [a personal information manager] or electronic mail system, I would be concerned because Microsoft has done the conversions extremely well in this product," Sloane said. "[Outlook] goes out

and explores your system, and if you're using Eudora or any one of a number of other products, it makes the porting of that information into the Outlook environment absolutely seamless." ■



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DSL

Continued from page 1

analyst at Dataquest, Inc., in San Jose, Calif.

There are at least eight different flavors of DSL (see graphic), each suited to its own purpose and none compatible with another. A high-bit-rate DSL (HDSL) modem, for example, cannot talk to an ADSL modem. And a rate adaptive DSL

LOOKING FOR AN INTEROPERABLE FUTURE

None of the following DSL technologies are compatible.

Technology	Standard?
ADSL	Yes
DSL Lite	No
HDSL	Yes
HDSL2	No
MVL	No
RADSL	No
SDSL	No
VDSL	No

SCO

Continued from page 1

of SCO's OpenServer Release 5 and UnixWare 2 operating systems, and comes tailored for six uses: large-scale business applications, Web publishing, electronic-commerce, messaging, departmental applications and specialized embedded systems.

Besides laying the groundwork for the ultimate migration to Merced, the release begins the task of integrating SCO's OpenServer and UnixWare operating systems, said Doug Michels, SCO's executive vice president and chief technology officer.

SCO acquired UnixWare in 1995 from Novell, which had acquired it from AT&T, the company that first developed the

(RADSL) modem cannot talk to a symmetric DSL (SDSL) modem.

Even within one DSL technology, vendors have not made their products interoperable. So a PairGain Technologies, Inc. HDSL modem does not work with an Adtran, Inc. HDSL modem, even though both meet the HDSL standard. For some DSL flavors, there is no standard at all. But now, with cable modems threatening to capture the consumer broadband access market, the DSL world is caught up in a frenzy of cooperation.

DSL sees the light

Microsoft Corp., Intel Corp., Compaq Computer Corp., the major regional phone companies and virtually every DSL hardware vendor are working frantically on a standard for yet another flavor, DSL Lite, an inexpensive, easy-to-install version of DSL.

Known as the Universal ADSL Working Group (UAWG), the group's goal is to ship PCs equipped with DSL Lite modems by Christmas. That is a very ambitious goal, but some believe it

can be met. The UAWG also is committed to interoperability, although that could take two to three years to achieve, according to Robert Weiner, vice president of sales for DSL products at Paradyne Corp. The compatibility lag could hurt sales.

Currently, the UAWG is writing a proposed DSL Lite standard that it plans to present to the International Telecommunication Union (ITU) sometime this spring. With major UAWG members also sitting on the ITU, fast action is expected. "The idea of a standards battle is not making anyone feel warm and fuzzy," Azuma said.

Many vendors don't plan to wait for a standard. They say they will make DSL Lite modems based on the UAWG proposal as soon as the proposal is ready. In many cases, that just means rewriting the firmware that runs their existing modems.

"Three to six months after the UAWG makes its proposal, we will have first samples of these [DSL Lite] modems," said Robert Rango, general manager of the modem and multimedia group at Lucent Technologies,

operating system. While OpenServer is a Unix derivative, it has been refined over the years to be a simple, reliable operating system used primarily on servers in retail establishments to support end-user devices. In contrast, UnixWare is a robust general-purpose platform, Michels said.

With this new release, OpenServer and UnixWare will begin to offer a similar look and feel. The developer's kit will be merged, as will some administrative functions. "We'll try to upgrade customers to UnixWare 7 slowly, maybe 10% to 20% per year for the next couple of years," Michels said. The migration will culminate when Merced arrives. It is expected in 1999 or 2000.

In the meantime, UnixWare 7

gives SCO a weapon to begin to attack the glass house. While huge retailers such as CVS, Walgreens and Taco Bell use SCO products in their retail outlets, those distributed systems are typically tied to a Unix box from IBM, Hewlett-Packard Co. or Sun Microsystems, Inc. back at headquarters, Michels said.

Now SCO can pitch UnixWare 7 on multiprocessor Intel boxes for use in headquarters, he said. Although the operating system can address up to 64G bytes of memory and be used on servers with up to 32 processors, the market sweet spot is machines outfitted with four to eight Pentium II processors, 8G bytes of memory and 100G bytes worth of disk space, he said.

SCO has garnered support for UnixWare 7 from IBM, Compaq Computer Corp.-Tandem, HP and others, despite the fact that many of these companies peddle their own flavors of Unix for high-end Reduced Instruction Set Computing boxes.

Prices for UnixWare 7 start at \$795.

Niccolai is a correspondent with IDG News Service's San Francisco bureau.

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Network World 161 Worcester Road, Framingham, Mass. 01701-9172, (508) 875-8400
Periodicals postage paid at Framingham, Mass., and additional mailing offices. Posted under Canadian International Publication agreement #0385662. Network World (ISSN 0887-7661) is published weekly, except for a single combined issue for the last week in December and the first week in January by Network World, Inc., 161 Worcester Road, Framingham, Mass. 01701-9172.

To apply for a free subscription, complete and sign the qualification card in this issue or write Network World at the address below. No subscriptions accepted without complete identification of subscriber's name, job function, company or organization. Based on information supplied, the publisher reserves the right to reject non-qualified requests. Subscriptions: 1-508-820-7444.

Nonqualified subscribers: \$5.00 a copy; U.S.: \$129 a year (except Washington, DC, \$136.74); Canada: \$160.50 (including 7% GST, GST #12665952); Central & South America: \$150 a year (surface mail); Europe: \$205 a year (surface mail); all other countries: \$300 a year (airmail service). Four weeks' notice is required for change of address. Allow six weeks for new subscription service to begin. Please include mailing label from front cover of the publication.

Network World can be purchased on 35mm microfilm through University Microfilms Int'l., Periodical Entry Dept., 300 Zeeb Road, Ann Arbor, Mich. 48106.

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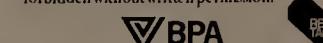
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Inc. Once a standard is formally set, Lucent, Alcatel Telecom and other vendors said they will upgrade to it.

In addition, vendors plan to make the DSL Lite modems so they can also act as 56K bit/sec analog modems. That way customers can buy the modems and use them immediately over any phone line. When a DSL service becomes available in their area they can upgrade to DSL Lite without buying a new device.

A refined standard for ADSL, which will push interoperability by clarifying some areas in the current standard that are open to interpretation, is expected later this year. When different vendors build modems based on different interpretations, the

modems tend to not work with each other.

The refined standard also will make DSL Lite a subset of ADSL. That means an ADSL modem will also be able to act as a DSL Lite modem. A service provider then could install a single DSL modem that could support full ADSL service or DSL Lite service, depending on what the customer wanted.

The ITU also is working on a standard for a handshake between DSL modems that will let them reveal to each other what DSL technologies they support. That way the modems can negotiate how they will speak to each other, according to Ken Krechmer, principal at Communications Standards Review, who is a member of the ITU. ■

DSL carrier eyes national market

Digital subscriber line (DSL) carrier Covad Communications Co. hopes to open up shop in six more local markets across the country over the next 12 months, becoming the first carrier specializing in the technology to play in multiple regions.

Covad, which offers DSL access services to corporate customers, started out last year in the San Francisco area while fighting for regulatory approval to offer services in other states.

It plans to expand to Los Angeles and Boston next, followed by Seattle, New York and Washington, D.C. (see map).

The firm's services, designed for corporate remote access, include various-speed data-only links that are charged for on a flat monthly rate. DSL traffic from remote offices or telecommuters' homes is aggregated within Covad's ATM network and fed to a central corporate site over either a frame relay or ATM connection.

In provisioning the service, Covad uses a variety of DSL technologies from 144K bit/sec ISDN-based DSL to rate adaptive DSL at speeds up to 1.5M bit/sec. The technology that is used depends on how much the customer wants to pay and how much speed each individual copper telephone line can handle.

The price of Covad's 128K bit/sec DSL service drew Microsoft Corp.'s WebTV Networks to the service, according to Robert Gutierrez, network engineer for WebTV.

Engineers on his staff were using dial-up ISDN to access the WebTV network from home, some of them routinely racking up \$300 to \$400 phone bills per month. With the Covad service, Gutierrez pays \$90 per month per line.

In addition to the lower monthly rates, Gutierrez was able to avoid additional hardware costs because the ISDN DSL service required regular ISDN terminal adapters which his remote users already had.

Because the DSL link is nailed up all the time, it cuts out the 20- to 30-second delay injected by setting up dial-up ISDN calls.

Covad offers a range of access speeds from 144K bit/sec to 1.5M bit/sec for \$90 to \$195 per month. A T-1 frame relay link to the corporate central site is \$975 per month and a DS-3 ATM link costs \$4,000. Covad can be reached at (408) 490-4500.

—Tim Greene

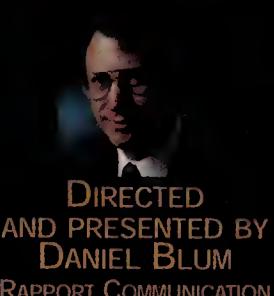
Branching out

Within a year, Covad will offer DSL services for remote access in six cities.



1998 SEMINAR DATES AND LOCATIONS:

April 6	Washington, DC
April 7	Philadelphia, PA
April 22	Atlanta, GA
April 23	Dallas, TX
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Enterprises across the world are eager to capitalize on Internet client/server e-mail as a universal infrastructure utility for supporting vital groupware and electronic commerce applications. However, neither monolithic proprietary mail systems nor yesterday's shareware mail packages can successfully support very high volume, extremely mission critical applications on your intranet, extranets, or the Internet at large.

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PDF use revisited: Yes and no, how and why

Judging by the number of responses I got to my column about the use and abuse of Adobe's Portable Document Format (PDF) (Feb. 16, page 58), it seems I have hit a nerve.

Guess what I found when I sorted through the feedback? Twenty-five percent were in favor of PDF, 25% were against it and the remainder didn't come firmly down on one side or the other but discussed how and why they use PDF.

In the how and why group was Eric Behr, of NIU Mathematical Sciences in DeKalb, Ill.: "Mathematicians, chemists, physicists, etc. are struggling to find ways of presenting technical material on the Web. We are between the rock of aesthetically offensive kludges based on bitmap formats and the hard place of slick but immature Java concoctions which require a supercomputer to work at an acceptable speed. Right now PDF is a very good solution for a large group of users."

Eric's got a good reason to use PDF, at least until a more satisfactory Web-based solution comes along. But many respondents argued that PDF is appropriate technology because they can use PDF as if it were paper, a position that I think misses the point entirely.

David Dial, of Stow-Munroe Falls Library in Ohio, explained the library's use of PDF: "Document fidelity is useful where the printed document is a form that will be marked up by a user without a computer, and then the form will be scanned to be read. I work at a public library where we distribute thousands of copies of income tax forms. The common forms and schedules we obtain in hard copy from the Internal Revenue Service, and the less commonly needed we download from the 'Net or copy from a form-book supplied by the IRS."

The idea of using a computer to send a document to be printed, filled-out and then scanned back in is valid when the user doesn't have a computer. But when the user does have a computer, well, do I really need to explain why the whole

sequence would be ridiculous? To make it really silly, you could print the form from PDF, fax it, have it printed onto paper at the receiver, OCR it, modify the digital image, print it and fax it back — a process I'll bet people really do use.

Stan Wolf wrote: "In our industry [marine transportation] we have a legitimate requirement. We need to disseminate various shipping documents, such as Bills of Lading and Freight Correction Notices. Document fidelity is essential."

Stan, David and many others are essentially using PDF for pre-press work — the transport and display of materials

that are destined to be printed because some other organization requires it. While this is a justifiable use of PDF, longer term the fixation on paper will diminish the ability of these firms to implement electronic commerce.

One reader wrote: "We use PDF for documents that we do not want changed, such as technical sheets . . . If someone was to change one of these documents we could be liable." But PDF offers no guarantee against or protection from document alteration. There is nothing to stop you from creating a fake version of a PDF file and passing it off as the original.

I still contend that PDF has only three valid uses. First, where a paper document is to be generated for someone who isn't using a computer. Second, when the document is intended for rendition on paper. And finally, for electronic distribution of forms when the recipient can't or won't accept electronic submission.

I doubt I'll get the last word, as we've opened a forum on Network World Fusion (www.nwfusion.com/forum/pdf.html) to discuss PDF and related issues. So please, join in. From the letters I've received, this should be an outstanding battle, er, debate. See you in the ring.

Do you feel like a contender? Boast to nwcolumn@gibbs.com or (800) 622-1108, Ext. 7504.



Mark Gibbs

'NET BUZZ

The latest on the Internet/intranet industry

By Chris Nerney

SLAY GOLIATH? NO, HIT HIM UP FOR SOME CASH Last year there was plenty of talk about how the days of easy venture money for Internet start-ups were over. Don't believe it.

Sure, Netscape wannabes now face a bit more due diligence than they did during the headless — sorry, we meant "heady" — days of 1996, when the words "Internet" or "Web" in a company's name guaranteed three rounds of venture funding and an initial public offering.

But take it from us, the money is a-flowin' faster than ever, and not just from the venture capitalists, who raised a record \$9 billion in '97.

Increasingly, established technology companies are pouring cash into start-ups, usually as partners with traditional venture capital firms. This year alone, two major high-tech players — Lucent and Novell — announced the formation of venture funds.

The two firms join Microsoft, Intel, Nortel, Cisco and 3Com in establishing separate units to finance promising young companies.

While corporate investing in start-ups isn't a new phenomenon, the size of the companies doing the investing is.

"Five years ago you couldn't get the time of day from major corporations," says Jim Breyer, managing partner for venture capital firm Accel Partners. "It would have been second- and third-tier companies in general. Today the smartest and most successful companies are the ones doing the best job of business development."

Breyer says early-stage investors such as Accel benefit from the presence of large companies in the venture market because they provide start-ups with built-in distribution channels.

AK AK AK AK! MICROSOFT IS YOUR FRIEND In last year's campy science fiction movie spoof *Mars Attacks*, invaders from the Red Planet fire death rays at fleeing Earthlings as an alien voice reassures doomed humans, "Don't run. We are your friends."

Java developers should keep that scene in mind in the wake of Microsoft's announcement regarding a revised version of the Java programming language for Windows-based computers.

Microsoftians continue to talk about giving programmers "choices." They restate their desire to make programmers' jobs easier. They extol the virtues of the Java language.

Then they zap you with their proprietary Windows death gun.

For those few who still confuse words with actions, here's reality: Microsoft doesn't care about programmers, Java or otherwise, beyond locking them into the Windows architecture. Because Java's cross-platform promise represents a threat to Windows, Java must be neutralized. Everything else is just so much talk.

Citizens of Planet Java, crank up those Slim Whitman records and run for your lives.

'AND OVER IN JAPAN, RUBBERNECKERS ARE SLOWING TRAFFIC TO A CRAWL' Being stuck in a traffic jam can be frustrating, but not as frustrating as being stuck in one without knowing the cause. So it is with the Internet. Slow connections can be maddening, especially so if you don't know the source of the problem.

Now a network of Web sites providing Internet services, tools and content offers cyber-surfers daily reports on Internet traffic efficiency around the world.

The **Internet Traffic Report**, part of a site called [Andover.Net](http://www.andover.net) (www.andover.net), posts hourly performance updates of dozens of routers located in North and South America, Europe, Asia and Australia.

Using the traffic report, you can study Internet performance patterns to determine your best usage time and whether current delays are caused by a worldwide Web slowdown or the ineptitude of your Internet service provider.

Andover.Net is a service of **Andover Advanced Technologies, Inc.** of Acton, Mass.

Unlike some software giants we could mention, 'Net Buzz means you no harm. We merely ask for your best Internet- and intranet-related news items. Contact Chris Nerney at (508) 820-7451 or cnerney@nwu.com. Resistance is futile.





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BEFORE.



AFTER.

"ANS SureRemoteSM put OfficeMax ahead of the wave in corporate online ordering."

— Michael Feuer, Chairman and CEO,
OfficeMax

OfficeMax developed a system so corporate clients could order office supplies on-line. It was flexible enough to let a CEO order a laptop while limiting the pencils purchased by accounting. It let clients know who ordered what, when. But the system needed to work whether or not every user had a secure Internet connection. Impossible? Evidently for the competition it was. Not so for ANS.

ANS SureRemoteSM Service is the easy-to-manage, reliable, high speed IP solution. Now, anywhere in the U.S., customers connect to OfficeMax Corporate Direct with just a local phone call. So, if you would like to be as satisfied by a remote access solution as OfficeMax and their customers or would like to hear about other ways to build your business, call us at 1-800-456-8267 or send e-mail to info@ans.net or visit www.ans.net

HAPPILY EVER AFTER
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